iSR6152
Router Manager

User's Guide

ISR645610-00 B

Information furnished in this manual is believed to be accurate and reliable. However, QLogic Corporation assumes no responsibility for its use, nor for any infringements of patents or other rights of third parties which may result from its use. QLogic Corporation reserves the right to change product specifications at any time without notice. Applications described in this document for any of these products are for illustrative purposes only. QLogic Corporation makes no representation nor warranty that such applications are suitable for the specified use without further testing or modification. QLogic Corporation assumes no responsibility for any errors that may appear in this document.

Document Revision History

Revision A, August 10, 2011

Revision B, November 22, 2011

Changes	Sections Affected
Updated references to the utility name from "SANsurfer iSCSI/FC Router Manager" and "iSCSI/FC Router Manager" to *SANsurfer Router Manager*.	All
Updated screen shots to show the new utility name, SANsurfer Router Manager, in the title bar:	
Figure 1-3	"Viewing SANsurfer Router Manager Information" on page 1-9
Figure 2-1	"Main Window" on page 2-2

Table of Contents

Preface

Intended Audience ix
What's in this Guide ix
What's in the Help System x
Related Materials x
Documentation Conventions xi
License Agreements xiii
Technical Support xiii
Training xiii
Contact Information xiv
Knowledge Database xiv

1 Getting Started

System Requirements 1-1
Connecting the Management Workstation to the Router 1-2
Connecting the Hardware 1-2
Setting the Workstation IP Address 1-2
Configuring the Router Ports 1-3
Updating the Firmware 1-3
Starting SANsurfer Router Manager 1-4
Starting SANsurfer Router Manager on Windows 1-5
Starting SANsurfer Router Manager on Linux or Solaris 1-5
Starting SANsurfer Router Manager on Macintosh 1-5
Connecting SANsurfer Router Manager to the Router 1-6
Getting Help 1-7
Viewing the Help System 1-7
Specifying the Help Browser 1-8
Viewing SANsurfer Router Manager Information 1-9
Setting Security 1-10
Refreshing the Host Configuration 1-12
Exiting SANsurfer Router Manager 1-13

2 Understanding the User Interface

Main Window 2-2
Menu Bar 2-3
File Menu 2-3
View Menu 2-4
Settings Menu 2-4
Wizards Menu 2-4
Help Menu 2-6
Toolbar 2-6
Shortcut Menus 2-6
Tree Pane 2-10
Router Tree 2-10
Services Tree 2-13
Status Icons and Text 2-13
Router Tree Icons 2-13
Router 2-14
FC and iSCSI Ports 2-14
VP Groups 2-14
Discovered FC and iSCSI Initiators 2-15
FC and iSCSI Discovered Targets 2-15
iSCSI Presented Targets 2-16
FCIP Routes 2-16
Arrays 2-16
Services Tree Icons 2-16
Data Migration Jobs 2-17
Data Migration Groups 2-17

3 Viewing Router Information

Router iSR6152 3-2
Information 3-2
Basic Information 3-3
Management Information 3-6
NTP Server Information 3-8
Security 3-9
SNMP Management 3-10
SNMP Configuration 3-11
Enabled SNMP Trap Receivers 3-11
Features 3-12

FC Ports 3-12
Information 3-13
Advanced Configuration 3-14
Statistics 3-14
Performance 3-15
iSCSI Ports 3-17
Information 3-17
iSCSI Port Information 3-18
iSCSI Port Network Settings 3-18
iSNS 3-19
Advanced Configuration 3-20
Statistics 3-22
VP Groups 3-23
Discovered FC Initiators 3-24
Information 3-24
LUN List 3-25
Discovered iSCSI Initiators 3-25
Information 3-26
LUN List 3-27
FC Discovered Targets 3-27
FC Presented Targets 3-28
iSCSI Presented Target List 3-28
Information 3-29
iSCSI Presented Target 3-30
Discovered LUN Information 3-31
iSCSI Discovered Targets 3-32
Information 3-32
Arrays 3-34
iSCSI Presented Targets 3-35
Information 3-35
FCIP Routes 3-37
FCIP Route Info 3-38
Statistics 3-42

4 Viewing Service Information

Router iSR6152 4-1
Data Migration Info 4-2

Data Migration Jobs 4-3
Active Data Migration Jobs 4-3
Synchronizing Jobs 4-4
Completed Data Migration Jobs 4-4

A Simple Network Management Protocol (SNMP)

Introduction. A-1
SNMP Properties. A-1
SNMP Trap Configuration A-2
Management Information Base (MIB) A-2
System Information A-3
Network Port Table A-4
Fibre Channel Port Table. A-6
Sensor Table A-8
Notifications A-11
Notification Objects A-11
Agent Start Up Notification A-12
Agent Shut Down Notification A-12
Network Port Down Notification. A-12
Fibre Channel Port Down Notification A-12
Sensor Notification A-12
Generic Notification A-13

B Log Messages

Index

List of Figures

Figure		Page
1-1	Connect to Router Dialog Box	1-6
1-2	Browser Location Dialog Box	1-8
1-3	About SANsurfer Router Manager Box	1-9
1-4	Setting System Security	1-11
1-5	Refresh Dialog Box	1-12
2-1	SANsurfer Router Manager Interface	2-2
2-2	Shortcut Menus (Examples)	2-7
2-3	Router Tree Pane (Example)	2-11
2-4	Component Information Pane (Example)	2-12
2-5	Services Tree Pane (Example)	2-13
3-1	Router Information: Basic Information Page	3-3
3-2	Router Information: Management Information Page	3-6
3-3	Router Information: NTP Server Information Page	3-8
3-4	Router Information: Security Page	3-9
3-5	SNMP Management Page	3-10
3-6	Features Page	3-12
3-7	FC Port: Information Page	3-13
3-8	FC Port: Advanced Configuration Page	3-14
3-9	FC Port: Statistics Page	3-15
3-10	FC Port: Performance Page	3-16
3-11	iSCSI Port: Information Page	3-17
3-12	iSCSI Port: Advanced Configuration Page	3-20
3-13	iSCSI Port: Statistics Page	3-23
3-14	VP Groups: VPGROUP_x Page	3-23
3-15	Discovered FC Initiators: Information Page	3-24
3-16	Discovered FC Initiators: LUN List Page	3-25
3-17	Discovered iSCSI Initiators: Information Page	3-26
3-18	Discovered iSCSI Initiator: LUN List Page	3-27
3-19	FC Discovered Targets: FC Presented Targets Page	3-28
3-20	FC Discovered Targets: iSCSI Presented Target List Page	3-29
3-21	FC Discovered Targets: Information Page	3-29
3-22	FC Discovered Targets: iSCSI Presented Target Page	3-30
3-23	FC Discovered Targets: Discovered LUN Information Page	3-31
3-24	iSCSI Discovered Targets: Information Page	3-32
3-25	Arrays: Information Page	3-34
3-26	iSCSI Presented Targets: Information Page	3-36
3-27	FCIP Routes: FCIP Route Info Page	3-38
3-28	FCIP Routes: Statistics Page	3-43
4-1	Data Migration Info Page	4-2
4-2	Data Migration Jobs: Active Data Migration Jobs Page	4-3
4-3	Data Migration Jobs: Synchronizing Jobs Page	4-4
4-4	Data Migration Jobs: Completed Data Migration Jobs Page	4-4

List of Tables

Table		Page
1-1	System Requirements	1-1
2-1	Interface Description	2-3
2-2	Toolbar Buttons	2-6
2-3	Shortcut Menu Options	2-8
3-1	TCP Window Scaling Factor	3-41
A-1	SNMP Properties	A-1
A-2	SNMP Trap Configuration Parameters	A-2
B-1	iSR6152 Router Log Messages	B-2

Preface

This user's guide describes the features of SANsurfer Router Manager used to configure and manage the QLogic iSR6152 Intelligent Storage Router (iSR6152). The iSR6152 management utility is a GUI consisting of menus, buttons, and options that you can use to manage iSR6152s from a workstation on Linux® and Windows® platforms. You can view and change network, port, security, and mapping configuration for one or more iSR6152s. The utility shows the most current system information.

For hardware installation, configuration, and diagnostic details, see the *iSR6152 Intelligent Storage Router Installation Guide*.

Intended Audience

This guide is for users who are responsible for installing, managing, and servicing the iSR6152 router and the SAN equipment to which it is attached.

What's in this Guide

This guide contains the information needed to monitor the iSR6152 router using SANsurfer Router Manager. This preface explains the typographic conventions used in this guide, lists related documents, and specifies the intended audience.

The remainder of the user's guide is organized into the following chapters and appendices:

- Chapter 1 Getting Started provides information to help you begin using SANsurfer Router Manager. It describes how to start and exit SANsurfer Router Manager, connect to routers, use the help system, and set system security.
- Chapter 2 Understanding the User Interface illustrates and describes the components of the SANsurfer Router Manager's graphical user interface (GUI), including the windows, panes, menus, toolbar buttons, and status icons.
- Chapter 3 Viewing Router Information describes the pages used to monitor and manage the iSR6152 router—including its ports and connected devices—by viewing and selecting components in the router tree.

- Chapter 4 Viewing Service Information describes the pages used to monitor and manage the licensed services—including data migration—by viewing and selecting components in the services tree.
- Appendix A Simple Network Management Protocol (SNMP) provides reference material for the SNMP, which you can use to manage the iSR6152 router using a third-party SNMP management utility.
- Appendix B Log Messages provides reference material on messages logged to a file, which you can retrieve using the **View Log** feature. (For details, see "Using the Router Log" in the help system.)

Following the appendices are a glossary of terms used and an index to help you quickly find the information you need.

What's in the Help System

Supplementing this user's guide is the SANsurfer Router Manager help system, which provides procedural topics organized as follows:

- ***Managing the Router*** provides procedures that walk you through some common management tasks performed using SANsurfer Router Manager, including assigning symbolic names, setting broadcast options, working with virtual port groups (VPGs), saving and restoring router configuration, and using the router log.
- ***Using the Wizards*** describes the wizard dialog boxes that walk you through various router configuration procedures.
- ***Configuring CHAP*** describes and provides the procedures for configuring CHAP using SANsurfer Router Manager.
- ***Data Migration Service*** provides basic information about this licensed feature. For complete details, refer to the *Data Migration Service for iSR6200 User's Guide* and *Data Migration Service for iSR6200 Planning Guide*, available on any of the iSR6200 Series product download pages on QLogic.com.

Related Materials

- *iSR6152 Intelligent Storage Router Installation Guide*
- *iSR6152 Command Line Interface (CLI) User's Guide*
- *Internet Protocol, Version 6 (IPv6) Specification*, RFC2460
- *Neighbor Discovery for IP Version 6 (IPv6),* RFC2461
- *IPv6 Stateless Autoconfiguration*, RFC2462

- *Internet Control Message Protocol (ICMPv6) for the Internet Protocol Version 6 (IPv6) Specification*, RFC2463
- *Transmission of IPv6 Packets over Ethernet Networks*, RFC2464 iSCSI draft standard draft-ietf-ips-iSCSI-20
- *Internet engineering task force (IETF) – iSCSI Requirements and Design Considerations, iSCSI Naming and Discovery, Internet Protocol Specification (IPv4)*, RFC793
- *Transmission Control Protocol (TCP) Specification,* RFC1122, Requirements for Internet Hosts-Communication Layers
- *TCP Extensions for High Performance*, RFC1323
- *TCP Congestion Control*, RFC2581
- *NewReno Modification to TCP's Fast Recovery Algorithm*, RFC2582
- *ANSI SCSI – SCSI-3 Architecture Model (SAM), X3T10/994D/Rev 18, SCSI-3 Controller Command Set, X3T10/Project 1047D/Rev 6c. IEEE – 802.1Q Virtual LAN (VLAN), 802.1p Priority of Service, 802.3x Flow Control, 802.3ad Link Aggregation*
- *SCSI-3 Fibre Channel Protocol (SCSI-FCP)*, X3.269:1996
- *Fibre Channel Physical and Signaling Interface (FC-PH)*, X3.230:199
- *Fibre Channel 2nd Generation (FC-PH-2)*, X3.297:1997
- *Third Generation Fibre Channel Physical and Signaling Interface (FC-PH-3), X3.303:1998, Fibre Channel-Arbitrated Loop (FC-AL-2)*, working draft, revision 6.4, August 28, 1998
- *Fibre Channel Fabric Loop Attachment Technical Report (FC-FLA) NCITS/TR-20:1998, Fibre Channel-Private Loop Direct Attach Technical Report (FC-PLDA)*
- *SCSI Fibre Channel Protocol-2 (FCP-2)* working draft, revision 3, October 1, 1999
- *Fibre Channel over TCP/IP (FCIP)*, RFC3821
- *ANSI Information Technology-SCSI 3 Architecture Model*, revision 18, November 27, 1995

Documentation Conventions

This guide uses the following documentation conventions:

- ***NOTE:*** provides additional information.
- ***CAUTION!*** indicates the presence of a hazard that has the potential of causing damage to data or equipment.

- Text in blue font indicates a hyperlink (jump) to a figure, table, or section in this guide, and links to Web sites are shown in underlined blue. For example:
  - Table 9-2 lists problems related to the user interface and remote agent.
  - See "Installation Checklist" on page 3-6.
  - For more information, visit www.qlogic.com.
- Text in **bold** font indicates user interface elements such as menu items, buttons, check boxes, or column headings. For example:
  - Click the **Start** button, point to **Programs**, point to **Accessories**, and then click **Command Prompt**.
  - Under **Notification Options**, select the **Warning Alarms** check box.
- Text in `Courier` font indicates a file name, directory path, or command line text. For example:
  - To return to the root directory from anywhere in the file structure: Type `cd /root` and press ENTER.
  - Enter the following command: `sh ./install.bin`
- Key names and key strokes are indicated with UPPERCASE:
  - Press CTRL+P.
  - Press the UP ARROW key.
- Text in *italics* indicates terms, emphasis, variables, or document titles. For example:
  - For a complete listing of license agreements, refer to the *QLogic Software End User License Agreement*.
  - What are *shortcut keys*?
  - To enter the date type *mm/dd/yyyy* (where *mm* is the month, *dd* is the day, and *yyyy* is the year).
- Topic titles between quotation marks identify related topics either within this manual or in the online help, which is also referred to as the *help system* throughout this document.
- Screen shots that depict only that portion of the interface currently under discussion are shown with jagged edges, as shown in Figure i.

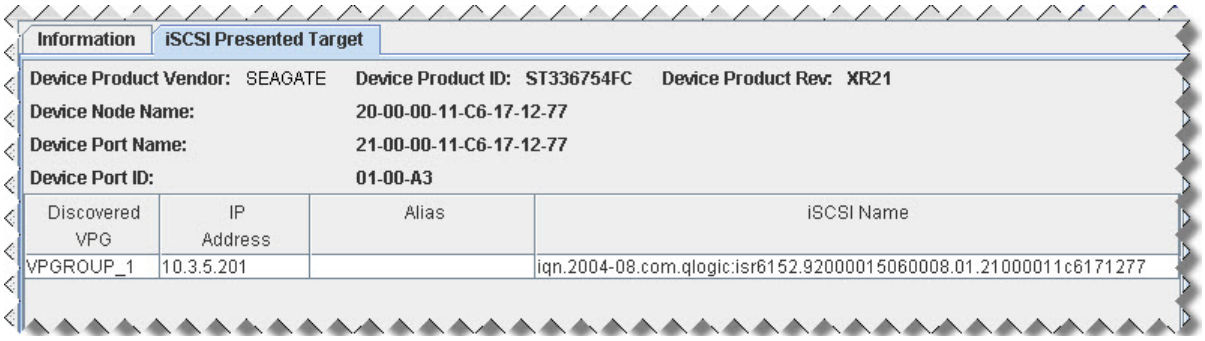


Figure i. Example: Jagged Edges Depict Partial Interface

License Agreements

Refer to the *QLogic Software End User License Agreement* for a complete listing of all license agreements affecting this product.

Technical Support

Customers should contact their authorized maintenance provider for technical support of their QLogic switch products. QLogic-direct customers may contact QLogic Technical Support; others will be redirected to their authorized maintenance provider.

For details about available service plans, or for information about renewing and extending your service, visit the Service Program Web page at http://www.qlogic.com/services.

Training

QLogic offers training for technical professionals for all iSCSI, InfiniBand, and Fibre Channel products. From the main QLogic Web page at www.qlogic.com, click the **Support** tab at the top, and then click **Training and Certification** on the left. The QLogic Global Training portal offers online courses, certification exams, and scheduling of in-person training.

Technical Certification courses include installation, maintenance, and troubleshooting of QLogic products. Upon demonstrating knowledge using live equipment, QLogic awards a certificate identifying the student as a certified professional. You can reach the training professionals at QLogic by e-mail at training@qlogic.com.

Contact Information

QLogic Technical Support for products under warranty is available during local standard working hours excluding QLogic Observed Holidays. For customers with extended service, consult your plan for available hours. For Support phone numbers, see the Contact Support link at http://support.qlogic.com.

Support Headquarters	QLogic Corporation 4601 Dean Lakes Blvd. Shakopee, MN 55379 USA
QLogic Web Site	www.qlogic.com
Technical Support Web Site	http://support.qlogic.com
Technical Support E-mail	support@qlogic.com
Technical Training E-mail	training@qlogic.com

Knowledge Database

The QLogic knowledge database is an extensive collection of QLogic product information that you can search for specific solutions. We are constantly adding to the collection of information in our database to provide answers to your most urgent questions. Access the database from the QLogic Support Center: http://support.qlogic.com.

1 Getting Started

This chapter provides information to help you get started using SANsurfer Router Manager. It includes the following sections:

- "System Requirements" on page 1-1
- "Connecting the Management Workstation to the Router" on page 1-2
- "Starting SANsurfer Router Manager" on page 1-4
- "Connecting SANsurfer Router Manager to the Router" on page 1-6
- "Getting Help" on page 1-7
- "Setting Security" on page 1-10
- "Refreshing the Host Configuration" on page 1-12
- "Exiting SANsurfer Router Manager" on page 1-13

System Requirements

Table 1-1 lists the SANsurfer Router Manager minimum system requirements for the platform, hardware, and software.

Table 1-1. System Requirements

Component	Minimum Requirements
Operating System	One of the following: ■ Windows 2000, 2003 ■ Windows 2008 ■ Linux Red Hat® Enterprise 3.*x* ■ Linux Red Hat Enterprise 4.*x* ■ Linux Red Hat 5 ■ SUSE® Linux 9.0 Enterprise ■ SUSE Linux 10.0 ■ Mac OS X ■ Solaris® Intel® ■ Solaris SPARC®

Table 1-1. System Requirements (Continued)

Component	Minimum Requirements
Memory	256MB or more
Disk Space	150MB per installation
Processor	500MHz or faster
Hardware	RJ-45 Ethernet port, RS-232 serial port (optional)
Internet Browser	To view the help system, the latest version of one of the following: ■ Microsoft® Internet Explorer® ■ Mozilla® Firefox®

Connecting the Management Workstation to the Router

This section describes how to connect the management workstation to the router for the first time, which requires the following procedures:

- "Connecting the Hardware" on page 1-2
- "Setting the Workstation IP Address" on page 1-2
- "Configuring the Router Ports" on page 1-3
- "Updating the Firmware" on page 1-3

Connecting the Hardware

SANsurfer Router Manager requires an Ethernet connection to the router using either of the following hardware configurations:

- Indirect Ethernet connection from the management workstation to the router RJ-45 connector through an Ethernet switch or hub. This requires a 10/100 Base-T straight cable.
- Direct Ethernet connection from the management workstation to the router RJ-45 Ethernet connector. This requires a 10/100 Base-T crossover cable.

For hardware configuration details, refer to the *iSR6152 Intelligent Storage Router Installation Guide*.

Setting the Workstation IP Address

The IP of a new router is 10.0.0.1. To ensure that your workstation is configured to communicate with the 10.0.0 subnet, refer to the following instructions for your workstation.

For a Windows workstation:

1. On the Windows **Start** menu, point to **Settings**, point to **Control Panel**, and then click **Network and Dial-up Connections**.
2. Click **Make New Connection**.
3. Click **Connect to a private network through the Internet**, and then click **Next**.
4. Type the new IP address; for example, **`10.0.0.253`**.

For a Linux or Solaris workstation:

1. Open a command window.
2. Enter the following commands, where `(interface)` is your interface name:

```
ifconfig (interface)
ip10.0.0.253
netmask 255.255.255.0
```

Configuring the Router Ports

To configure router ports, select an iSCSI or Fibre Channel port in the left pane (tree pane), and then complete the Information and Advanced Configuration pages for that port in the right pane. For details, see “iSCSI Ports” on page 3-17 and “FC Ports” on page 3-12.

Updating the Firmware

The router comes with current firmware installed. You can upgrade the firmware from the management workstation as new firmware becomes available. You can update the firmware on the router using either SANsurfer Router Manager or CLI commands.

To update the firmware using SANsurfer Router Manager:

1. Download the most recent iSR6152 firmware version to your workstation from the QLogic Web site:

   http://driverdownloads.qlogic.com

2. Check the current firmware version as follows:
   a. Start SANsurfer Router Manager and connect to the iSR6152 router.
   b. Select the **Router iSR6152** node in the router tree pane.
   c. On the router’s Information page, Basic Information subpage (see Figure 3-1 on page 3-3), review the **Software Version**. If the current revision is what you want to replace, continue with Step 3.

3. Launch the FW Update Wizard using one of the following methods:
   - ❑ On the **File** menu, click **FW Update Wizard**.
   - ❑ Press CTRL+F.
4. On the FW Update Wizard dialog box under **Router Selection**, select the check box corresponding to the router (specified by IP address) to update, and then click **Next**.
5. Complete the **Firmware File Selection** section as follows:
   a. Click **Browse**, and then on the Open dialog box, navigate to the folder where you saved the firmware file.
   b. Select the appropriate `isr-6152-x_x_x_x.bin` file (where *x_x_x_x* identifies the firmware version), and then click **Open**.
   c. When the selected firmware file name appears in the **Firmware Image File** box, click **Next**.
6. Under **Confirm Changes**, review the firmware status and confirm the changes as follows:
   a. Review the list of routers to be updated with the specified firmware file.
   b. If you want to save a copy of this firmware configuration, click **Save Configuration to File**. Browse to the appropriate directory, enter a file name, and then click **Save**.
7. Click **Next**.

   The **Firmware Update Status** section of the FW Update Wizard shows the progress of the firmware updates and performs a security check to verify the changes.
8. In the Security Check dialog box, type the password, and then click **OK**.
9. Review the firmware update status, and then click **Next**.
10. On the final dialog box, click **Finish** to complete the firmware update.

Starting SANsurfer Router Manager

SANsurfer Router Manager startup procedures differ depending on the operating system:

- Starting SANsurfer Router Manager on Windows
- Starting SANsurfer Router Manager on Linux or Solaris
- Starting SANsurfer Router Manager on Macintosh

Starting SANsurfer Router Manager on Windows

On a Windows system, do one of the following to start the SANsurfer tool, which includes the SANsurfer Router Manager user interface.

To start SANsurfer Router Manager on Windows:

Use one of the following options:

- Double-click the **SANsurfer Router Manager** icon on your desktop (if the icon was created during installation):

- On the Windows **Start** menu, point to **Programs**, point to **QLogic Management Suite**, and then click **SANsurfer Router Manager**.

  The SANsurfer Router Manager main window opens (see “Main Window” on page 2-2).

Starting SANsurfer Router Manager on Linux or Solaris

On Red Hat/SUSE Linux and Solaris SPARC/x86 systems, follow these steps to start SANsurfer Router Manager.

To start SANsurfer Router Manager on Linux or Solaris:

1. Ensure that you are in a graphical user environment, such as Xwindows.
2. Open a command terminal.
3. Change to the directory where you installed SANsurfer Router Manager.
4. Type **`SANsurferRouterManager`**, and then press ENTER.

   The SANsurfer Router Manager main window opens (see “Main Window” on page 2-2).

Starting SANsurfer Router Manager on Macintosh

On Macintosh systems, follow these steps to start SANsurfer Router Manager.

To start SANsurfer Router Manager on Macintosh:

1. Open Finder.
2. Browse to the folder where you installed SANsurfer Router Manager.
3. Double-click the **SANsurfer Router Manager** icon:

The SANsurfer Router Manager main window opens (see “Main Window” on page 2-2).

Connecting SANsurfer Router Manager to the Router

Follow the steps in this section to connect SANsurfer Router Manager to the iSR6152 router.

To connect SANsurfer Router Manager to the iSR6152:

1. Open the Connect to Router dialog box using any of the following methods:
   - ❑ On the toolbar, click **Connect**:

   - ❑ Right-click anywhere in the router tree, and on the shortcut menu, click **Connect**.
2. In the Connect to Router dialog box (Figure 1-1), type the IP or host name, or click the down arrow to select the IP address or name of a previously connected host.

Figure 1-1. Connect to Router Dialog Box

3. Click **Connect**.

   When SANsurfer Router Manager connects to a new iSR6152 router, it adds the router node to the top of the list in the router tree.

Getting Help

This section provides information about:

- "Viewing the Help System" on page 1-7
- "Specifying the Help Browser" on page 1-8
- "Viewing SANsurfer Router Manager Information" on page 1-9

Viewing the Help System

You can view the application help for SANsurfer Router Manager at any time using one of the following methods:

- To view the help system from the main window, point to the **Help** menu, and then click **Browse Contents**. The help system opens in the browser you selected using the **Set Browser Location** option (see "Specifying the Help Browser" on page 1-8). The help window contains a navigation pane on the left and a topic pane on the right. In the navigation pane, click one of the following tabs to locate the information you want to view:
  - **Contents** lists topics organized by task, much like the Table of Contents in this user's guide. This list also includes book icons that open and close to show and hide topics related to the book title. Click a closed book icon to open it and see its list of topics. Click an opened book icon to close it and hide its topics. Click the title of any book or topic to view its content in the topic pane.
  - **Index** provides an alphabetically arranged list of keywords. To jump to a keyword, start typing it in the text box. Click any index entry to view a related topic in the topic pane. If a keyword has more than one topic associated with it, a menu lists related topics you can select.
  - **Search** provides access to all topics contained in the help system using advanced search capabilities. Type one or more keywords in the text box, and then press ENTER. The search tool lists all topics that meet your search criteria. Select any topic to view its contents in the topic pane.

NOTE:

The search tool accepts Boolean expressions (such as `AND`, `OR`, and `NOT`), as well as nested expressions. It also accepts exact strings entered between quotation marks. It does not support wild cards.

- To view help related to a specific wizard dialog box or window, click the **Help** button, located at the lower-right corner of the dialog box. The appropriate topic opens in a separate window. To view the navigation pane, click the **Show** button, located in the top-right corner of the topic pane. The page replaces the **Show** button with a **Hide** button, which you can click to close the navigation pane without closing the topic window.

Specifying the Help Browser

Follow these steps to specify the Web browser (Internet Explorer or Firefox, for example) that SANsurfer Router Manager launches when you open the help system (see "Viewing the Help System" on page 1-7).

To specify a browser:

1. On the SANsurfer Router Manager main window, open the **Help** menu, and then click **Set Browser Location**.

   The Browser Location dialog box opens (Figure 1-2).

Figure 1-2. Browser Location Dialog Box

2. In the **Browser Location** box, type the location of the browser program file. Be sure to specify the path and file name.

   If you do not know the location, click **Browse** to search for and select the browser program file. The Browser Location dialog box shows the new browser path and file name.

3. When you finish choosing your browser, do one of the following:
   - ❑ To save the browser location to the SANsurfer Router Manager configuration file, click **OK**.
   - ❑ To close the Browser Location dialog box without making changes, click **Cancel**.

Viewing SANsurfer Router Manager Information

The About box shows the product version number and QLogic copyright information.

To view information about SANsurfer Router Manager:

1. On the SANsurfer Router Manager main window **Help** menu, click **About**.

   The About SANsurfer Router Manager box opens (Figure 1-3).

Figure 1-3. About SANsurfer Router Manager Box

   The About box provides the following information:
   - ❑ Product name
   - ❑ Version number
   - ❑ Copyright information

2. To close the About box and return to the SANsurfer Router Manager main window, click **OK**.

Setting Security

SANsurfer Router Manager security ensures that any router configuration changes require password authorization. The router management tool prompts you to enter the password when you do any of the following:

- Attempt to save modified router information
- Update the firmware on a selected router
- Modify information for Fibre Channel or iSCSI ports
- Modify LUN mapping or masking parameters
- Rename, enable, or disable any virtual port group
- Run any of the wizards
- Save the router's configuration and persistent data as a field replaceable unit (FRU) to a `TGZ` file
- Restore the router's configuration and persistent data from an existing file

---

NOTE:

The default SANsurfer Router Manager access password is `config`. To ensure router security, change this password after installation.

To set the access password:

1. In the router tree, select the router for which you want to set the access password.
2. Click the **Information** tab.
3. On the Information page's vertical tabs on the left, click the lock tab .

   The Security page opens, and shows the host name at the top, as shown in Figure 1-4.

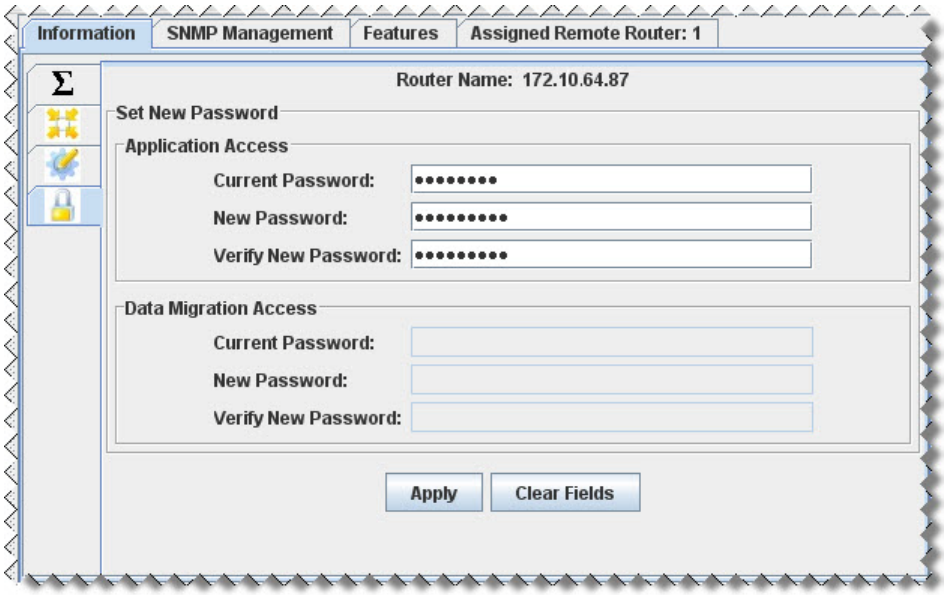


Figure 1-4. Setting System Security

4. Under **Application Access**, complete the following boxes:

   - ❑ **Current Password**: Type the existing login password.

NOTE:

The default password is `config`.

   - ❑ **New Password**: Type the new password.
   - ❑ **Verify New Password**: Type the new password again to confirm the new password.

NOTE:

If necessary, click **Clear Fields** to clear the typed entries in the Security page text boxes.

---

5. To update the access password, click **Apply**.

   The Apply New Password Confirmation dialog box confirms that the password has been changed.

6. Click **OK** to close the dialog box.

Refreshing the Host Configuration

The host configuration (including the router tree) shown in the SANsurfer Router Manager interface does not automatically update all configuration changes. To update the interface to view all configuration changes, either made by yourself or another user, choose one of the following options:

- On the toolbar, click the **Refresh** button:

- Right-click the router tree, and then on the shortcut menu, click **Refresh**.

SANsurfer Router Manager refreshes the view of all connected iSR6*xxx* routers.

In addition, if another user makes configuration changes on the host while you are connected, SANsurfer Router Manager automatically opens the Refresh dialog box (Figure 1-5), which identifies those changes. To manually update the view, click **Yes**.

Refresh
Changes have been detected for : 172.17.65.132.
The Basic Information Changed.
The Adv Information Changed.
The Password Changed.
The Management Settings Changed.
The Basic iSCSI Port Settings Changed.
The Adv iSCSI Port Settings Changed.
The iSNS iSCSI Port Settings Changed.
The Basic FC Port Settings Changed.
The Adv FC Port Settings Changed.
The Log Settings Changed.
The FW Changed.
The Target Map Changed (Map).
The Target Map Changed (Unmap).
The LUN Mask Changed.
The iSCSI Initiator Changed.
The iSCSI Initiator Removed.
The iSCSI Presented Target Changed.
The VLAN Settings Changed.
The target to Initiator Changed.
The Remote Router Info Changed.
Would you like to refresh?
Yes
No

Figure 1-5. Refresh Dialog Box

Exiting SANsurfer Router Manager

To exit SANsurfer Router Manager, choose one of the following options:

- On the SANsurfer Router Manager main window, open the **File** menu, and then click **Exit**.
- On the SANsurfer Router Manager main window, click the **Close** button in the upper right corner.
- Press the ALT+X keys.

2 Understanding the User Interface

This chapter describes the components of the SANsurfer Router Manager user interface, including the:

- “Main Window” on page 2-2
- “Menu Bar” on page 2-3
- “Toolbar” on page 2-6
- “Shortcut Menus” on page 2-6
- “Tree Pane” on page 2-10
- “Status Icons and Text” on page 2-13

Main Window

The SANsurfer Router Manager interface consists of a menu bar, a toolbar, a status bar, a tree pane, and an information/configuration/data pane with tabbed pages, as illustrated in Figure 2-1 and described in Table 2-1.

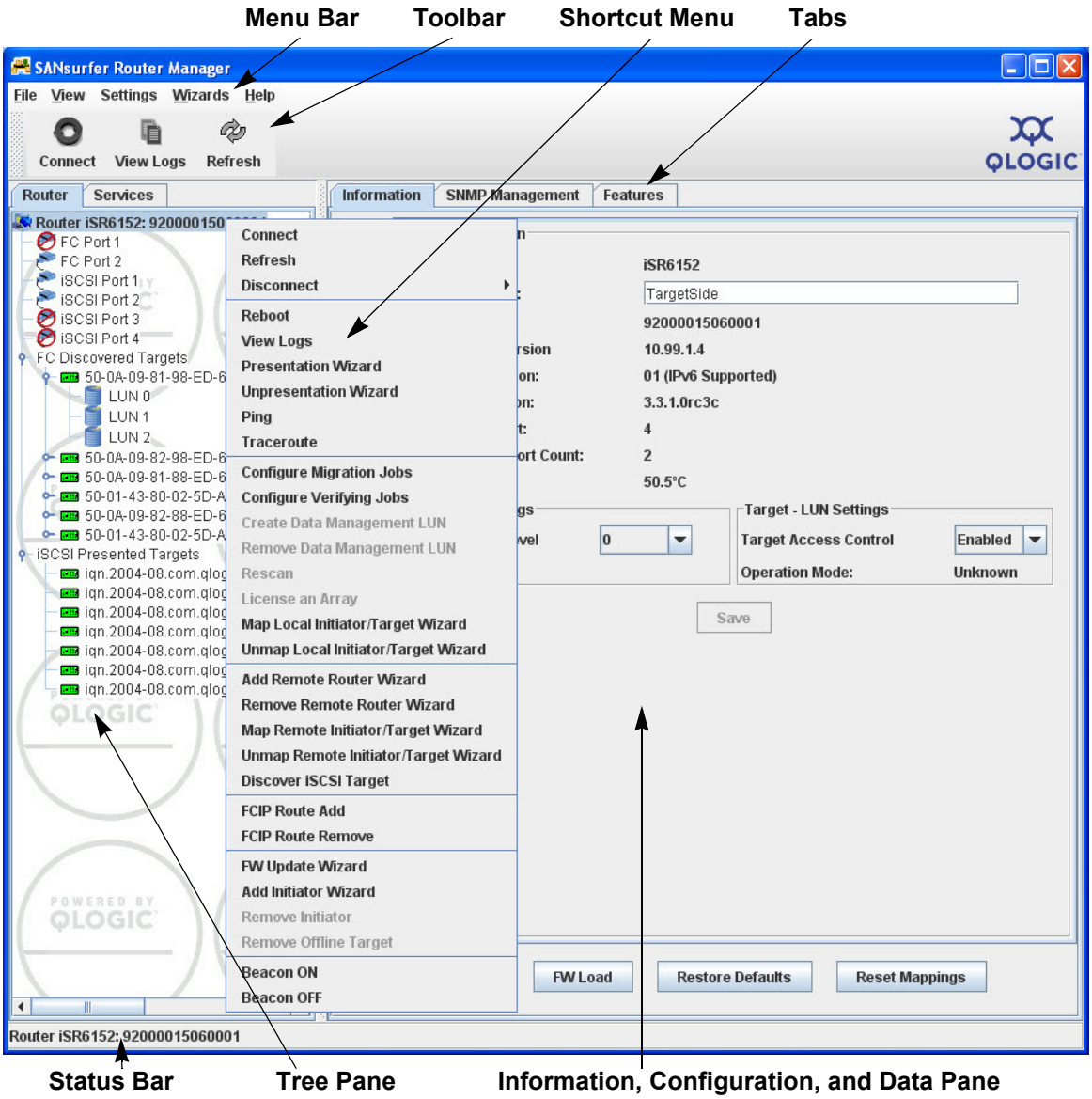


Figure 2-1. SANsurfer Router Manager Interface

Table 2-1. Interface Description

Item	Description
Menu Bar	The menu bar provides access to system functions and wizards. For details, see “Menu Bar” on page 2-3.
Toolbar	The toolbar buttons provide quick access to common functions: Connect, View Logs, and Refresh. For details, see “Toolbar” on page 2-6.
Shortcut Menu	The shortcut menu opens when you right-click anywhere inside the tree pane, and contains options available elsewhere in SANsurfer Router Manager. For details, see “Shortcut Menus” on page 2-6.
Tabs	Tabs in the right pane provide access to pages related to the component selected in the tree pane. To bring a hidden page to the front, click its tab.
Status Bar	The status bar at the bottom of the window provides status information for the router.
Tree Pane	The **Router** tree in the left pane shows the connected systems and their components. The **Services** tree shows data migration job information. An entry handle located to the left of a tree “branch” or node indicates that it is expandable. Click an entry handle or double-click the entry to expand or collapse a tree branch. To resize this pane, click and drag the window border. For details, see “Router Tree” on page 2-10.
Information, Configuration, and Data Pane	The right pane contains pages of information and data related to the currently selected component in the tree pane. Some data is configurable; other data is read-only. To resize this pane, click and drag the window border. For details, see Chapter 3 Viewing Router Information.

Menu Bar

The SANsurfer Router Manager menu bar contains the **File**, **View**, **Settings**, **Wizards**, and **Help** menus.

File Menu

The **File** menu provides the following options:

- **FW Update Wizard** launches the FW Update Wizard, which enables you to update the iSR6152 router’s firmware image.
- **Save FRU** preserves the router’s configuration and persistent data by saving it to a file. (For details, see “Saving the FRU” in the help system.)

- **Restore FRU** recovers the router's configuration and persistent data from a file. (For details, see "Restoring the FRU" in the help system.)
- **Import Host-LUN Info** loads the XML output from the host tool utility containing host volume information.
- **Save Capture** saves logs and configuration information for Technical Support.
- **Exit** closes SANsurfer Router Manager.

View Menu

The **View** menu provides the following option:

- **View Logs** provides access to the system logs and data migration logs. (For message descriptions, see Appendix B Log Messages.)

Settings Menu

The **Settings** menu provides the following option:

- **Broadcast** opens the Broadcast Settings dialog box, which enables you to configure the broadcast options. The workstation sends broadcast messages to locate routers within the same IP subnet as the workstation running SANsurfer Router Manager. (For details, see "Setting Broadcast Options" in the help system.)

Wizards Menu

NOTE:

The options that are available on the **Wizards** menu depend on the router to which SANsurfer Router Manager is connected and the features licensed for the connected router.

The **Wizards** menu provides the following options:

- **Add Initiator Wizard** launches the Add Initiator Wizard to configure the IP address and other parameters for an iSCSI initiator.
- **LUN Presentation Wizard** launches the Target Presentation/LUN Mapping Wizard to map an initiator to LUNs.
- **LUN Unpresentation Wizard** launches the Target Presentation/LUN Mapping Wizard to remove mapping between target LUNs and iSCSI initiators.
- **Discover iSCSI Target** launches the Discover iSCSI Target Wizard to discover targets by IP address and add the target to the discovered targets list.

- **Configure Migration Jobs** opens the Create Data Migration Job dialog box to schedule an individual data migration job or multiple jobs to run in batch mode. (Data migration is an optional, licensed feature of SANsurfer Router Manager.)
- **Configure Verifying Jobs** launches the Verify Migration Job wizard to configure verification jobs to compare data residing on two LUNs. (Data migration is an optional, licensed feature of SANsurfer Router Manager.)
- **Add Group** opens the Create New Group dialog box to create a named entity with which to group data migration jobs. You can create up to eight groups, where each group can contain up to 256 data migration jobs. (Data migration is an optional, licensed feature of SANsurfer Router Manager.)
- **Start Serial Scheduled Job(s)** opens the Serial Data Migration Jobs dialog box to schedule a start time for a data migration job. (Data migration is an optional, licensed feature of SANsurfer Router Manager.)
- **License an Array** launches the Data Migration License Array wizard to select an array for unrestricted data migration capacity. The router must have been provided an array license. (Data migration is an optional, licensed feature of SANsurfer Router Manager.)
- **Scrubbing LUN** opens the Create LUN Scrubbing Job dialog box to wipe out data residing on the LUN. This feature is primarily used to erase confidential information on the LUN. (Data migration is an optional, licensed feature of SANsurfer Router Manager.)
- **Create Data Management LUN** option is not valid for the iSR6152.
- **Remove Data Management LUN** option is not valid for the iSR6152.
- **Target Map Wizard** launches the Map Local Initiator/Target Wizard, which enables you to create a Fibre Channel presented target for online data migration. (Data migration is an optional, licensed feature of SANsurfer Router Manager.)
- **Target Unmap Wizard** unpresents a Fibre Channel target used for online data migration. (Data migration is an optional, licensed feature of SANsurfer Router Manager.)
- **iSCSI Target Map Wizard** opens the iSCSI Target Global Presentation dialog box to present multiple iSCSI targets (with a single LUN per target) into a single Fibre Channel target.
- **FCIP Route Add** launches the FCIP Route Add Wizard to configure a new FCIP route.
- **FCIP Route Remove** launches the FCIP Route Remove Wizard to delete a selected FCIP route.

NOTE:

Detailed procedures for the wizards are included in the “Using the Wizards” section of the help system.

Help Menu

The **Help** menu provides the following options:

- **Set Browser Location** specifies the browser that launches when you view the help system for SANsurfer Router Manager. For procedures, see “Specifying the Help Browser” on page 1-8.
- **Browse Contents** launches the help system for SANsurfer Router Manager. For procedures, see “Viewing the Help System” on page 1-7.
- **About** shows this utility’s version information. For procedures, see “Viewing SANsurfer Router Manager Information” on page 1-9.

Toolbar

The SANsurfer Router Manager toolbar buttons (see Table 2-2) provide quick access to common functions: connecting, viewing log files, and refreshing the current display. You can relocate the toolbar on the window by clicking and dragging the handle at the left edge of the toolbar.

Table 2-2. Toolbar Buttons

Button	Description
	Click **Connect** to add an iSR6*xxx* router to the router tree. For procedures, see “Connecting SANsurfer Router Manager to the Router” on page 1-6.
	Click **View Logs** to view the system log and data migration log. For message descriptions see Appendix B. For procedures, see “Using the Router Log” in the help system.
	Click **Refresh** to update the display with current information. For procedures, see “Refreshing the Host Configuration” on page 1-12.

Shortcut Menus

The shortcut menus (Figure 2-2) provide quick access to actions and wizards available elsewhere in SANsurfer Router Manager. To open a shortcut menu, right-click anywhere within the tree pane (left pane) on the Router or Services pages.

NOTE:

The options that are available on the shortcut menus depend on the router to which SANsurfer Router Manager is connected and the features licensed for the connected router.

Router Shortcut Menu

Services Shortcut Menu

Figure 2-2. Shortcut Menus (Examples)

Table 2-3 provides a description of each shortcut menu option, listed alphabetically.

NOTE:

- Data migration is an optional, licensed feature of SANsurfer Router Manager.
- Detailed procedures for the wizards are included in the “Using the Wizards” section of the help system.

Table 2-3. Shortcut Menu Options

Option	Description
Add Group	Opens a dialog box for specifying the name of a new data migration job group.
Add Initiator Wizard	Launches a wizard for entering an iSCSI initiator into the system database.
Add Remote Router Wizard	Launches a wizard for assigning a local router to a remote router as peers.
Beacon OFF	Stops flashing the iSR6152 router beacon.
Beacon ON	Starts flashing the iSR6152 router beacon to locate the physical router.
Configure Migration Jobs	Opens a dialog box for scheduling an individual data migration job or multiple jobs to run in batch mode.
Configure Verifying Jobs	Launches a wizard to configure verification jobs to compare data residing on two LUNs.
Connect	Adds an iSR6152 router to the router tree. For procedures, see “Connecting SANsurfer Router Manager to the Router” on page 1-6.
Create Data Management LUN	This data migration option is not valid for the iSR6152.
Disconnect	**Disconnect** detaches from the iSR6152 router, removing it from the router tree. **All Router(s)** detaches from all iSR6152 routers and removes them from the router tree.
Discover iSCSI Target	Launches a wizard to specify the IP address of the iSCSI target to be discovered. The target is added to the discovered targets list.
FCIP Route Add	Launches a wizard to configure a new FCIP route.

Table 2-3. Shortcut Menu Options (Continued)

Option	Description
FCIP Route Remove	Launches a wizard to select an FCIP route to delete.
FW Update Wizard	Launches a wizard for updating the router's firmware.
iSCSI Target Map Wizard	Opens a dialog box to present multiple iSCSI targets (with a single LUN per target) into a single Fibre Channel target.
License an Array	Launches a wizard to select an array for unrestricted data migration capacity. (Data migration is an optional, licensed feature of SANsurfer Router Manager.)
LUN Presentation Wizard	Launches a wizard for presenting (mapping) LUNs to iSCSI initiators.
LUN Unpresentation Wizard	Launches a wizard to remove mapping between target LUNs and iSCSI initiators.
Ping	Initiates a ping from the specified Ethernet port (management, GE1, or GE2) to a specified IP address.
Reboot	Restarts the iSR6152 router.
Refresh	Updates the window with current information for all connected storage routers. For procedures, see "Refreshing the Host Configuration" on page 1-12.
Remove Data Management LUN	This data migration option is not valid for the iSR6152.
Remove Group	Deletes the currently selected data migration job group.
Remove Initiator	Removes the selected iSCSI initiator. This option is available only when an initiator is selected (highlighted) in the router tree.
Remove Offline Target	Deletes the selected offline Fibre Channel target. This option is available only when an offline Fibre Channel target is selected (highlighted) in the router tree.
Rename Group	Opens a dialog box where you can enter a different name for the currently selected data migration job group.
Rescan	Causes the router to rediscover all target devices on both the Fibre Channel and iSCSI interfaces (ports).
Scrubbing LUN	Opens a dialog box to wipe out data residing on the LUN. This feature is primarily used to erase confidential information on the LUN.
Traceroute	Initiates a traceroute from the specified port (management, GE1, or GE2) to a specified IP address.

Table 2-3. Shortcut Menu Options (Continued)

Option	Description
View Logs	Opens the Router Log dialog box for either system or data migration log messages.

Tree Pane

The left pane of the SANsurfer Router Manager window contains a “tree” view of the router and services. The tree pane contains two tabbed pages:

- The tree on the Router page (see Router Tree) shows the connected systems and their components.
- The tree on the Services page (see Services Tree) shows data migration job information. (Data migration is an optional, licensed feature of SANsurfer Router Manager.)

An entry handle located to the left of a tree “branch” or node indicates that it is expandable. Click an entry handle or double-click the entry to expand or collapse a tree branch. To resize this pane, click and drag the window border.

Router Tree

The router tree (Figure 2-3) appears in the left pane of the SANsurfer Router Manager window when the **Router** tab is selected.

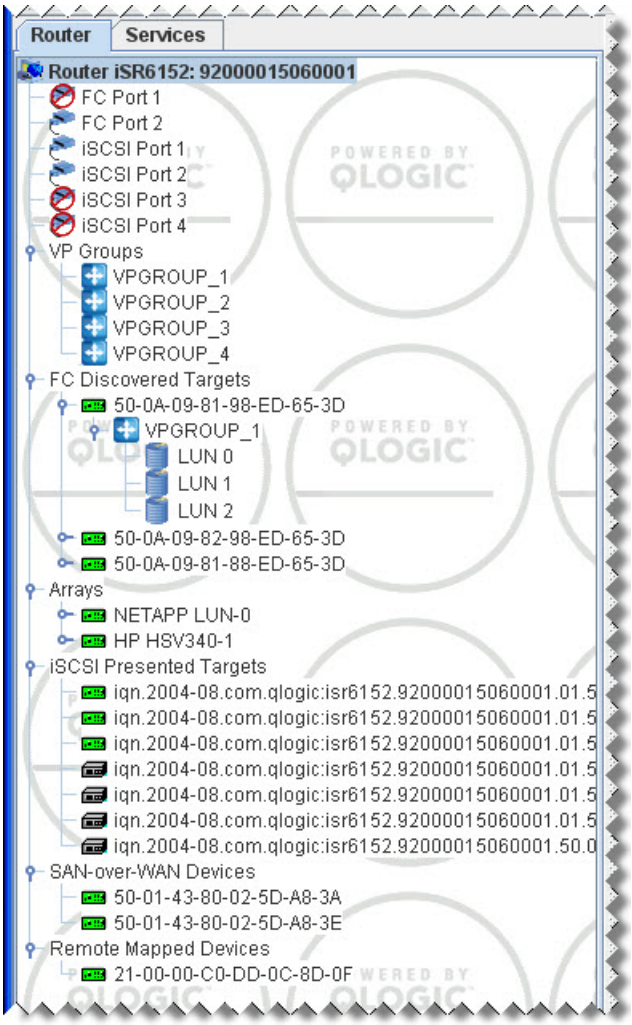


Figure 2-3. Router Tree Pane (Example)

The router tree contains the connected iSR6152 routers and the following components for each router:

- “FC Ports” on page 3-12
- “iSCSI Ports” on page 3-17
- “VP Groups” on page 3-23
- “Discovered FC Initiators” on page 3-24
- “Discovered iSCSI Initiators” on page 3-25
- “FC Discovered Targets” on page 3-27
- “iSCSI Discovered Targets” on page 3-32

- “Arrays” on page 3-34
- “iSCSI Presented Targets” on page 3-35
- “FCIP Routes” on page 3-37

Click a component in the router tree in the left pane to view component details in the pages in the right pane (the information, configuration, and data pane). Figure 2-4 shows an example.

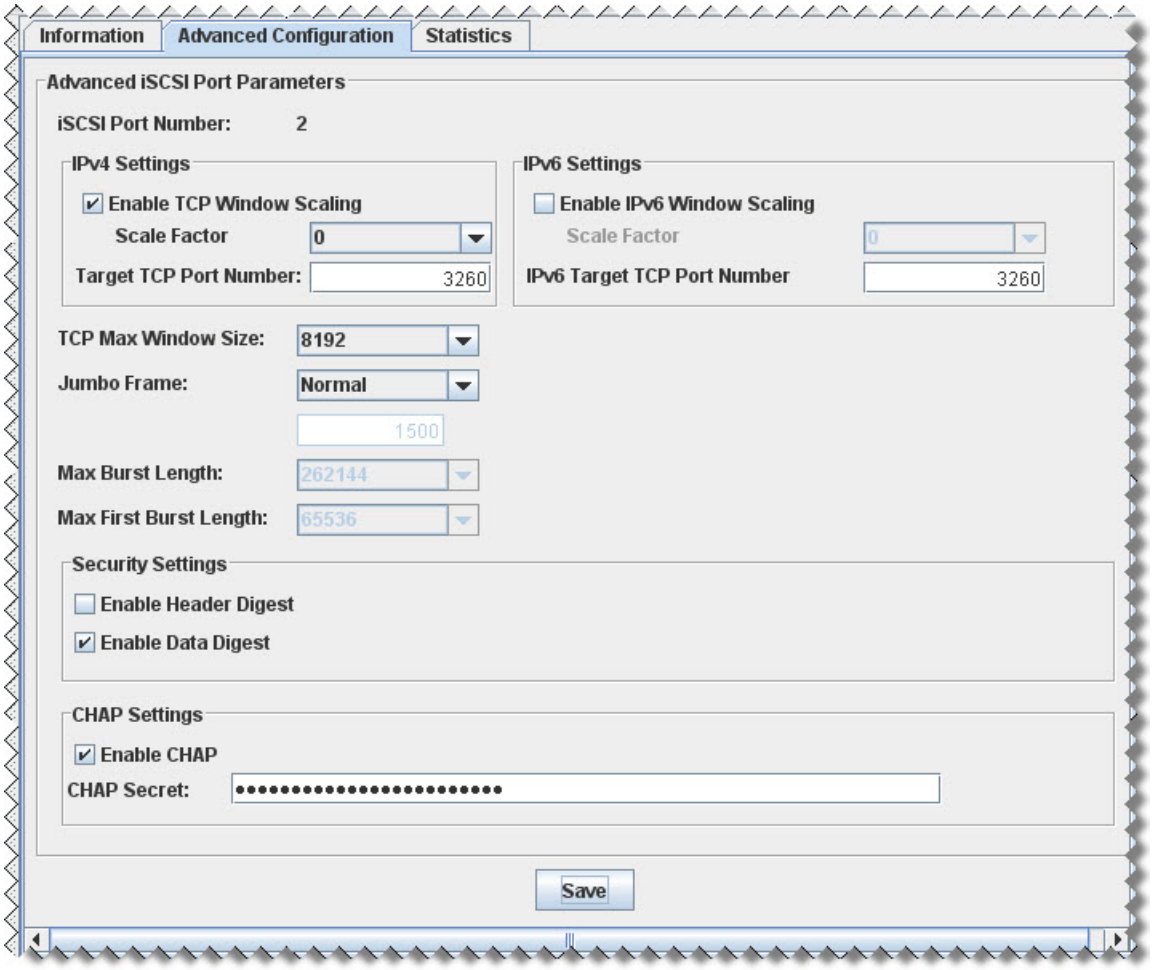


Figure 2-4. Component Information Pane (Example)

Component information includes details of the router, ports, discovered and presented targets, arrays, virtual port groups, and devices.

Services Tree

The services tree (Figure 2-5) appears in the left pane of the SANsurfer Router Manager window when the **Services** tab is selected. Services are licensed features of SANsurfer Router Manager.

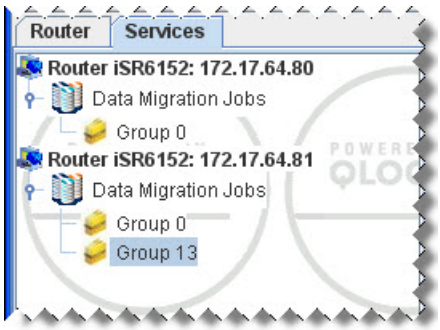


Figure 2-5. Services Tree Pane (Example)

Click a component in the services tree in the left pane to view service details in the pages in the right pane (the information, configuration, and data pane). Service information includes details of the data migration jobs that are active, synchronizing, and completed.

Status Icons and Text

The router and services trees contain icons with nodes you can select to obtain the status of each router and components.

Router Tree Icons

The following sections identify the status icons and text contained in the router tree:

- "Router" on page 2-14
- "FC and iSCSI Ports" on page 2-14
- "VP Groups" on page 2-14
- "Discovered FC and iSCSI Initiators" on page 2-15
- "FC and iSCSI Discovered Targets" on page 2-15
- "iSCSI Presented Targets" on page 2-16
- "FCIP Routes" on page 2-16
- "Arrays" on page 2-16

Router

Located at the root folder of the tree, each router node shows the following:

- **Router status icon** indicates operational status (blinking heartbeat).
- **Router model** identifies the model: iSR6152.

Example:

	`Router iSR6152`

Router icons

	Online router. The blinking heart on the router icon indicates that the connection between SANsurfer Router Manager and the agent is active for this router.

FC and iSCSI Ports

Nested beneath the **Router** node, port nodes show the following:

- **FC Port *n*** is the Fibre Channel port number; the router can support up to two Fibre Channel ports.
- **iSCSI Port *n*** is the iSCSI port number; the router can support up to four iSCSI ports.

Port icons

	FC Port *n* is port connection 1 or 2. To determine the port status, select the port node in the router tree. On the port's Information page, the **Link Status** field identifies the status as either **Link Up** or **Link Down**.
	iSCSI Port *n* is port connection 1, 2, 3, or 4. To determine the port status, select the port node in the router tree. On the port's Information page, the **Link Status** field identifies the status as either **Link Up** or **Link Down**.

VP Groups

Nested beneath the **Router** node, **VP Groups** nodes identify virtual port groups (VPGs). Most arrays limit the number of LUNs presented to a single host. You can enable and configure these VPGs to increase the number of supported LUNs on a storage array.

Example:

	`VPGROUP_1`

Discovered FC and iSCSI Initiators

Nested beneath the **Router** node, the **Discovered FC Initiators** and **Discovered iSCSI Initiator** nodes identify the initiators logged into the router.

Example:

	iqn.1991-05.com:microsoft:winhaz14

Initiator icons

	iqn.nnnn-nn.com.*xxxxx*:*xxxnnnn* is the initiator connection. To determine the connection status, select the initiator node in the router tree. On the initiator's Information page, the **Status** box identifies the status as either **Logged In** or **Logged Out**.

FC and iSCSI Discovered Targets

Nested beneath the **Router** node, **FC Discovered Targets** nodes identify one type of target:

- Discovered (targets that the router is logged into)

Example:

	22000-00-11-C6-2E-4B-BA

FC discovered target icons

	Target ID indicates the router is logged into the FC discovered target.
	Target ID indicates the FC target is offline from the router.

VP Group icon

Nested beneath each **FC Discovered Target** node, the **VP Group** nodes identify each virtual port group number.

Example:

	VPGROUP_1

LUN icons

Nested beneath each **VP Group** node, the LUN nodes identify each LUN number.

Example:

	LUN 0

LUN icons

	LUN online.

	LUN attached to offline targets.

iSCSI Presented Targets

Nested beneath the **Router** node, **iSCSI Presented Targets** nodes identify one type of target:

- Presented (targets that the router presents to the hosts)

Example:

	`iqn.2004-08.com.qlogic:isr6152.0823e00015.r1.02.2100000c50a660f1`

iSCSI presented target icons

	Target ID indicates the iSCSI presented target is online.
	Target ID indicates the iSCSI presented target is offline from the router.

FCIP Routes

Nested beneath the **Router** node, **FCIP Route** nodes identify Fibre Channel over IP (FCIP) routes. A maximum of two FCIP routes are allowed.

Example:

	FCIP Route Info *n* is enabled.
	FCIP Route Info *n* is disabled.

Arrays

Nested beneath the **Router** node, the **Array** nodes identify connected storage arrays.

Example:

	`HP HSV200-0`

Example:

	`21-00-00-C0-DD-0C-8D-0F`

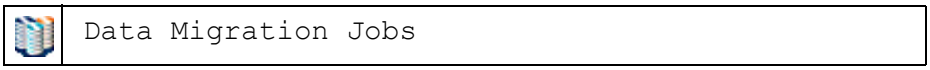
Services Tree Icons

The following sections identify the status icons and text contained in the services tree.

Data Migration Jobs

Nested beneath the **Router** node, the **Data Migration Job** nodes identify the data migration, compare, and scrubbing jobs for all data migration groups on the iSR6152.

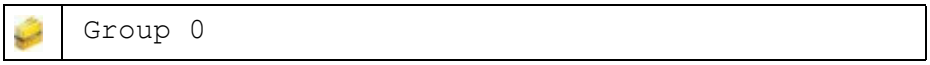
Example:



Data Migration Groups

Nested beneath the **Data Migration Jobs** node, the **Data Migration Group** nodes identify the default (**Group 0**) and user-created data migration groups.

Example:



3 Viewing Router Information

SANsurfer Router Manager lets you monitor and manage the iSR6152 router—as well as its ports and connected devices—by selecting components in the router tree in the left pane (for details, see “Router Tree” on page 2-10). Information, configuration, and data for the selected component appears in the right pane.

The following sections describe these components:

- “Router iSR6152” on page 3-2
- “FC Ports” on page 3-12
- “iSCSI Ports” on page 3-17
- “VP Groups” on page 3-23
- “Discovered FC Initiators” on page 3-24
- “Discovered iSCSI Initiators” on page 3-25
- “FC Discovered Targets” on page 3-27
- “iSCSI Discovered Targets” on page 3-32
- “Arrays” on page 3-34
- “iSCSI Presented Targets” on page 3-35
- “FCIP Routes” on page 3-37

Router iSR6152

The top of the SANsurfer Router Manager router tree in the left pane identifies the connected iSR6152 by serial number. Click the router in the left pane to view the following tabbed pages in the right pane:

- “Information” on page 3-2
- “SNMP Management” on page 3-10
- “Features” on page 3-12

NOTE:

The Assigned Remote Router page appears only if your router’s configuration includes a remote router. To define additional remote routers, use the Add Remote Router Wizard.

Information

The Information page for the router contains four vertical tabs on the left edge with icons that identify the content of each subpage. Click a vertical tab to open the corresponding subpage:

Basic Information

Management Information

NTP Server Information

Security

At the bottom of the Information page are buttons that function as follows:

- Click **Reboot** to reboot the router.
- Click **FW Load** to open the Firmware Load dialog box and update the router firmware.
- Click **Restore Defaults** to revert to the factory-set router options.
- Click **Reset Mappings** to remove all mappings between initiators and LUNs.

Basic Information

Click the first vertical tab Σ on the router's Information page to view the Basic Information page, as shown in Figure 3-1.

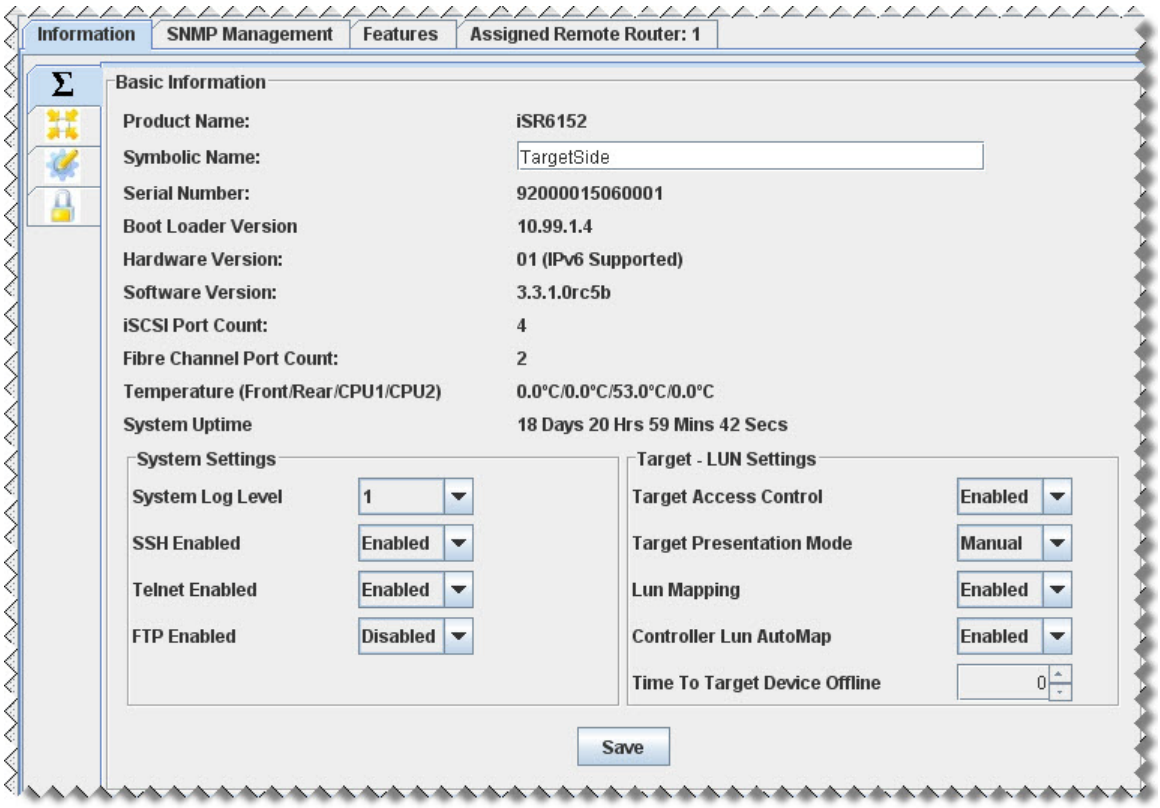


Figure 3-1. Router Information: Basic Information Page

The Basic Information page provides the following router information and settings:

- **Product Name** identifies the router model.
- **Symbolic Name** provides a box for you to assign a symbolic name (64 characters maximum) for the router.
- **Serial Number** shows the router's serial number.
- **Boot Loader Version** identifies the version of the installed boot loader.
- **Hardware Version** identifies the router hardware version number. Starting with version 6, the hardware supports IPv6.
- **Software Version** identifies the version of firmware loaded on the router. IPv6 requires software version 2.4.0.0 or later.
- **iSCSI Port Count** identifies the quantity of iSCSI ports on the router.

- **Fibre Channel Port Count** identifies the quantity of Fibre Channel ports on the router.
- **Temperature** shows the router's current temperature in degrees Centigrade.
- **System Uptime** indicates the number of days, hours, minutes, and seconds that this router has been up since booting after the last shutdown or reboot.
- **System Settings** provides the following options:
  - **System Log Level** specifies the level of logging as either **0**, **1**, or **2** (levels 1 and 2 will adversely impact performance).
  - **SSH Enabled.** Select **Enabled** or **Disabled** to allow or deny access to the router through SecureSHell (SSH).
  - **Telnet Enabled.** Select **Enabled** or **Disabled** to allow or deny access to the router through Telnet.
  - **FTP Enabled.** Select **Enabled** or **Disabled** to allow or deny access to the router through FTP.
- **Target - LUN Settings** provides the following options:
  - **Target Access Control.** Select **Disabled** (the default setting) to present all targets to all initiators. Or, select **Enabled** to obtain more control over which iSCSI targets are presented to which initiators. Target access control allows you to restrict access to iSCSI targets from initiators, per router. When enabled, the targets are presented to an initiator only if one or more LUNs are presented to that initiator from that target. When **Target Access Control** is enabled, the target is presented to an initiator if one or more LUNs are mapped to that initiator from any VP group. That is, the host "sees" all VP groups, even if the LUNs are presented only from one of the VP groups from that target.
  - **Target Presentation Mode.** Use this setting to specify whether the Fibre Channel targets are automatically or manually presented into the iSCSI SAN. Select **Auto** (the default and recommended setting) to have the Fibre Channel target automatically presented into the iSCSI SAN. Or, select **Manual** to manually present the Fibre Channel targets into the iSCSI SAN using the Target Map Wizard or the CLI `targetmap add` command.
  - **LUN Mapping.** Select **Enabled** or **Disabled** to allow or disallow access to a LUN.

- **Controller LUN Automap.** Select **Enabled** (the default setting) to obtain user-level control for mapping the storage array controller (SCSI Device Type 0x0C). When enabled, the controller LUN is automatically mapped to all hosts. Or, select **Disabled** to instead manually map the controller LUN to hosts.
- **Time to Target Device Offline.** This setting defines the time for which the iSCSI target device remains presented into the Fibre Channel SAN after the iSCSI target device has disappeared or logged out on the iSCSI side. Use this setting to handle conditions where the iSCSI target device logs out temporarily and then logs back in.
  - Specify a value of **0** to have the presentation immediately removed.
  - Specify a value of **30** to have the presentation of the Fibre Channel device remain intact for 30 seconds after the iSCSI target device has logged out.

  QLogic recommends a time to target device offline of 30 seconds to ensure that if the iSCSI target device temporarily logs out (disappears) and then logs back in within 30 seconds, the I/Os can resume without causing any disruption in the Fibre Channel SAN.

NOTE:

Use the **Time to Target Device Offline** parameter in a configuration where iSCSI target devices are mapped into the Fibre Channel SAN using the iSR6200. This parameter applies only to iSCSI target devices.

If you make any changes on this page, the **Save** button becomes enabled. Click it to preserve your modifications.

Management Information

Click the second vertical tab on the router's Information page to view the Management Information page, as shown in Figure 3-2.

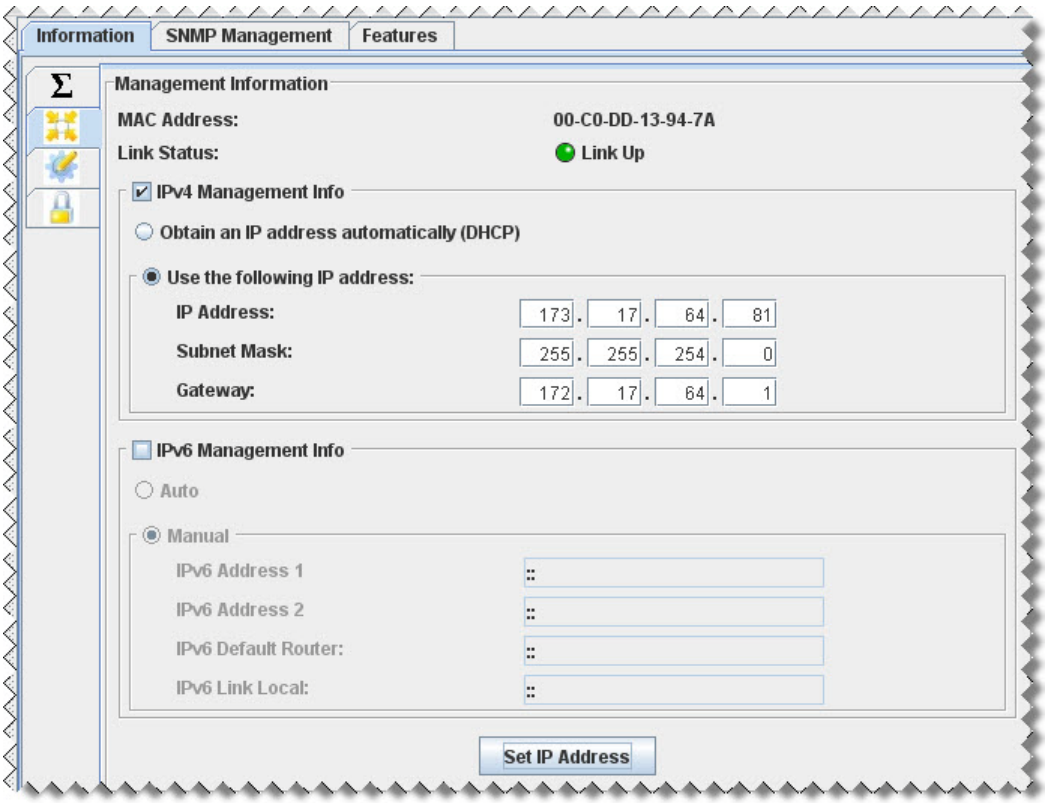


Figure 3-2. Router Information: Management Information Page

The Management Information page provides the following router information:

- **MAC** shows the management port's MAC address.
- **Link Status** shows the management port link status: **Link Up** or **Link Down**.
- **IPv4 Management Info.** Select this check box to use IPv4 (32-bit addressing), and then select one of the following:
  - Click **Obtain an IP automatically (DHCP)** to have the system automatically obtain the IPv4 address, subnet mask, and gateway through DHCP.
  - Click **Use the following IP** to specify a static IP by entering the following for the management port:
    - **IP** of the management port

- **Subnet Mask** of the management port
- **Gateway** IP of the server acting as a gateway to your Internet connection

- **IPv6 Management Info.** Select this check box to use IPv6 (128-bit addressing), and then select one of the following:
  - Click **Auto** to have the system automatically obtain the first and second IPv6 addresses, default router, and local link.
  - Click **Manual** to enter the following for the management port:
    - **IPv6 Address1** identifies the first user-assigned IPv6 to which the port responds. A value of **::** indicates that an IPv6 has not been assigned.
    - **IPv6 Address2** identifies the second user-assigned IPv6 to which the port responds. A value of **::** indicates that an IPv6 has not been assigned.
    - **IPv6 Default Router** identifies the default router for the IPv6. Depending on your network configuration, the system can also dynamically set the IPv6 default router.
    - **IPv6 Link Local** identifies the IPv6 link local of the port. It is not editable.
- Click **Set IP Address** to save your changes to the IP address.

NTP Server Information

Click the third vertical tab on the router's Information page to view the NTP Server Information page, as shown in Figure 3-3.

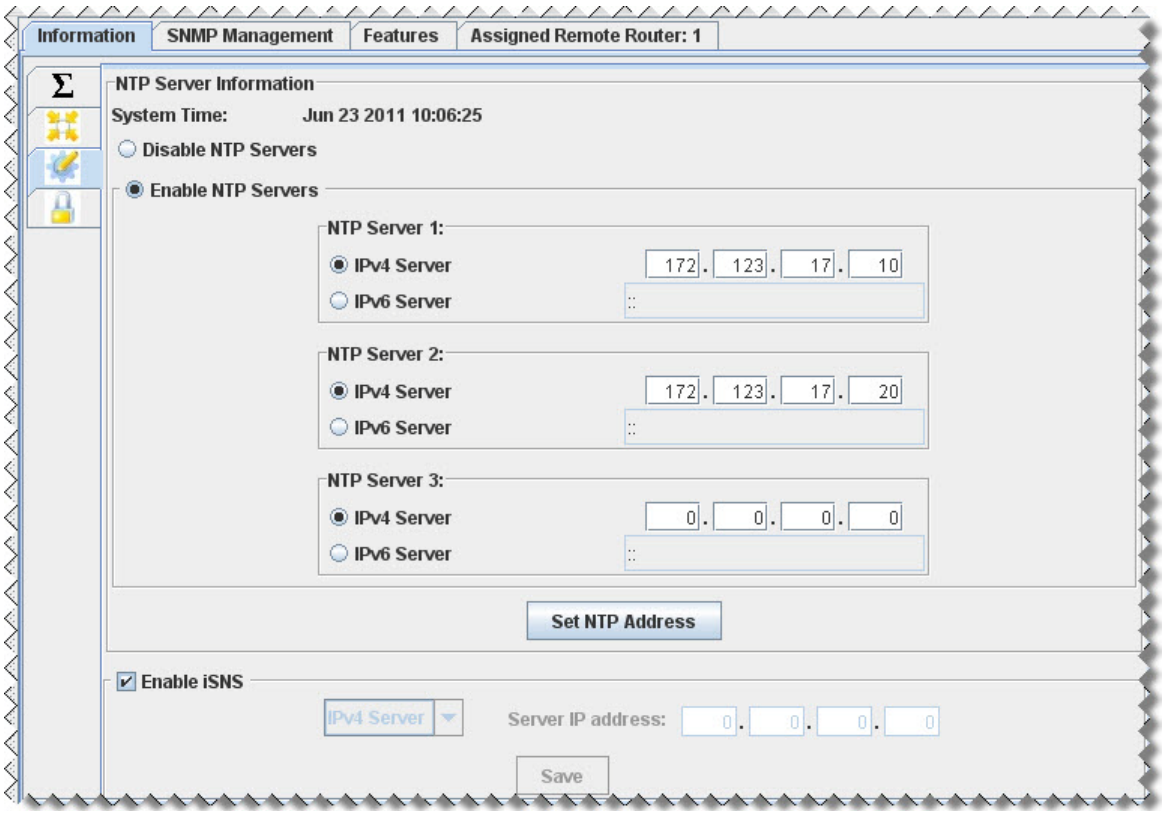


Figure 3-3. Router Information: NTP Server Information Page

The NTP Server Information page provides the following information:

- **System Time** indicates the current system date and time.
- Click **Disable NTP Servers** to disallow NTP servers to set the router's date and time.
- Click **Enable NTP Servers** to allow NTP servers to set the router's date and time. If you select this option, complete the following:
  - **NTP Server 1** specifies the IPv4 or IPv6 of the first NTP server to be queried by the router when setting its time and date.
  - **NTP Server 2** specifies the IPv4 or IPv6 of the second NTP server to be queried by the router when setting its time and date. This server is used only if the first NTP server did not respond.

- **NTP Server 3** specifies the IPv4 or IPv6 of the third NTP server to be queried by the router when setting its time and date. This server is used only if the first and second NTP servers did not respond.

- Click **Set NTP Address** to save the changes to the NTP servers IP addresses.
- Select the **Enable iSNS** check box to allow input of Internet simple name service (iSNS) server details. Then follow these steps:

  a. Select an IP server type: **IPv4 Server** or **IPv6 Server**.
  b. Type the **Server IP address**.
  c. Click **Save** to preserve the iSNS changes.

Security

Click the fourth vertical tab on the router's Information page to view the Security page, as shown in Figure 3-4.

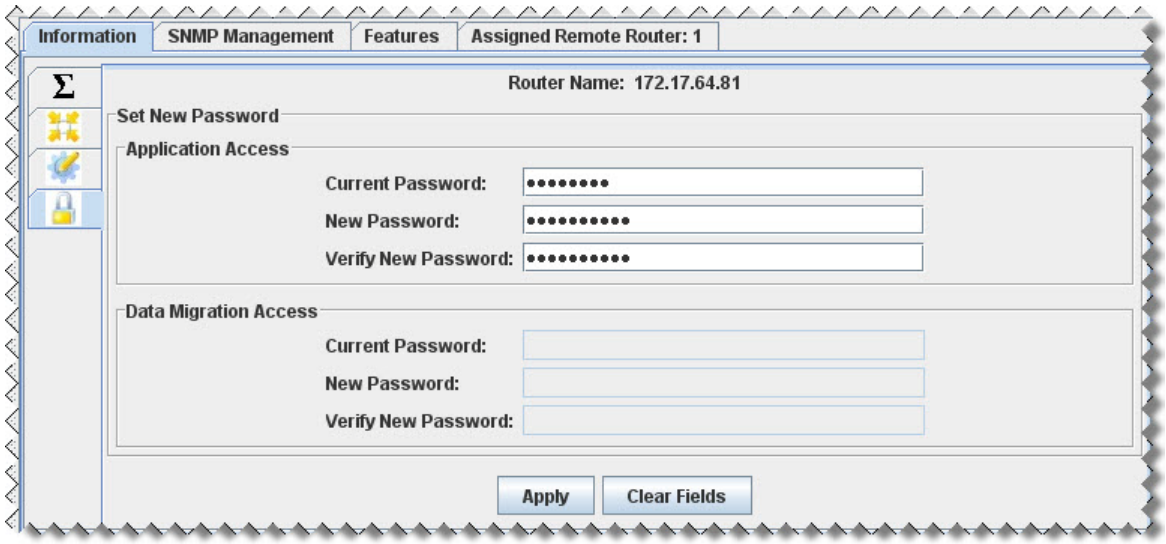


Figure 3-4. Router Information: Security Page

The Security page enables you to change the router's password for **Application Access** and **Data Migration Access** by completing the following:

- In the **Current Password** box, type the current password.
- In the **New Password** box, type the new router password.
- In the **Verify New Password** box, type the new password again.
- Click **Apply** to save the password changes.
- Click **Clear Fields** to remove your entries in the password boxes.

SNMP Management

The iSR6152 router has an SNMP agent that sends router status information to the SNMP management application. The SNMP Management page includes two sections: SNMP Configuration and Enabled SNMP Trap Receivers, as shown in Figure 3-5. If you make any changes on this page, click the **Save** button to preserve the SNMP management changes.

NOTE:

For more information, see Appendix A Simple Network Management Protocol (SNMP).

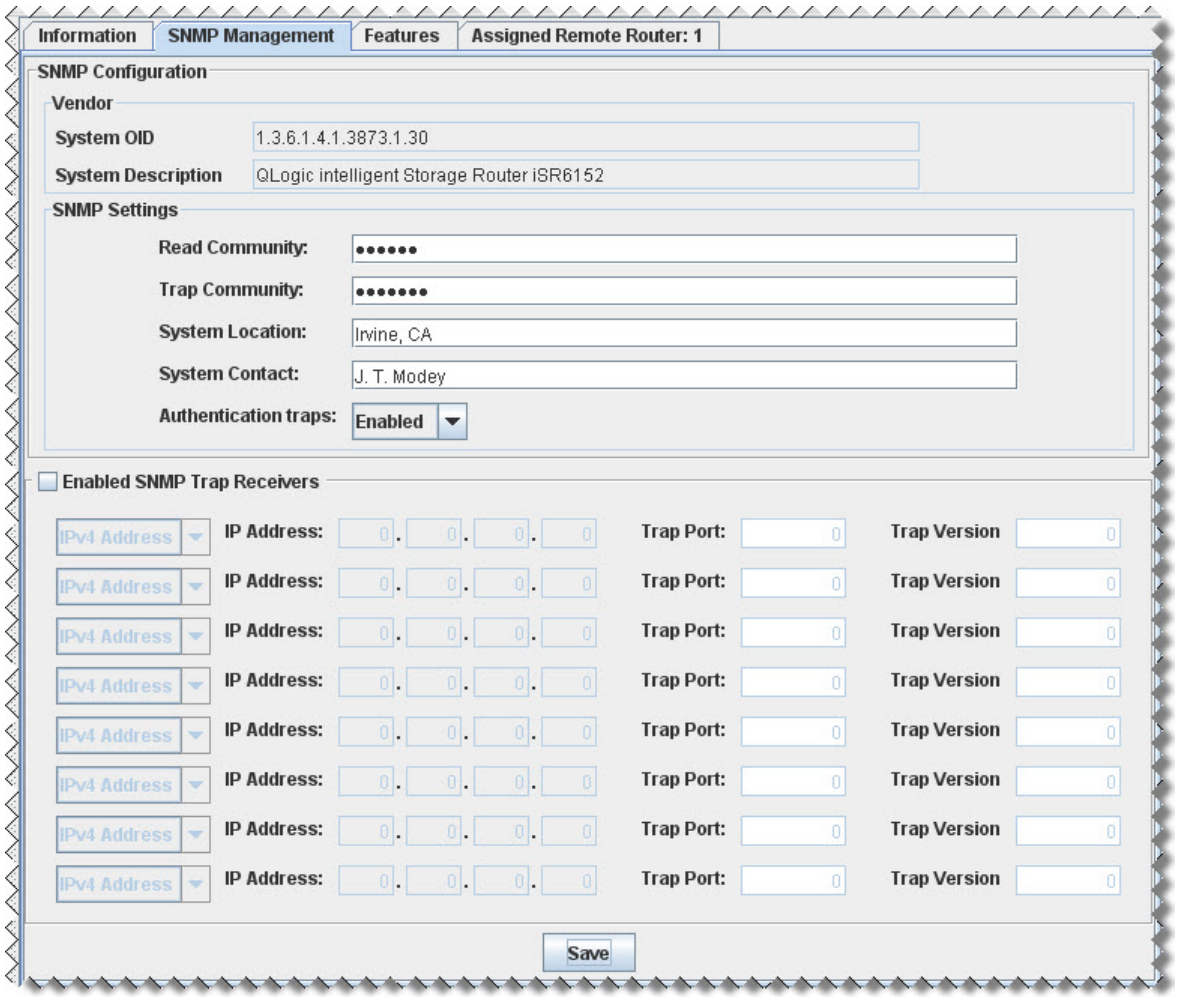


Figure 3-5. SNMP Management Page

SNMP Configuration

The SNMP Configuration options include the following:

- **System OID** indicates the vendor's system object identifier.
- **System Description** shows the product description of the router (QLogic iSR6152).
- **SNMP Settings** include the following:
  - **Read Community:** Type a password that authorizes an SNMP management server to read information from the router. This is a write-only box. The value on the router and the SNMP management server must be the same. The read community password can be up to 32 characters excluding the number sign (#), semicolon (;), and comma (,). The default is *public*.
  - **Trap Community**: Type a password that authorizes an SNMP management server to receive traps. This is a write-only box. The value on the router and the SNMP management server must be the same. The trap community password can be up to 32 characters excluding the number sign (#), semicolon (;), and comma (,). The default is *private*.
  - **System Location** specifies the name of the router location. The name can be up to 64 characters excluding the number sign (#), semicolon (;), and comma (,).
  - **System Contact** specifies the name of the person to be contacted to respond to trap events. The name can be up to 64 characters excluding the number sign (#), semicolon (;), and comma (,).
  - **Authentication Traps** enables or disables the generation of traps in response to authentication failures.

Enabled SNMP Trap Receivers

Select the **Enabled SNMP Trap Receivers** check box to enable the trap receiver boxes and specify each IP address, trap port, and trap version. The router can support up to eight trap addresses. For each entry, specify the following:

- **IP Protocol:** Select the IP protocol version from the list, either **IPv6** or **IPv4 Address**. The corresponding **IP** box changes to accept the appropriate format.
- **IP** specifies the IP address to which the SNMP traps are sent.
- **Trap Port** identifies the port number on which the trap is sent. The default is 162.
- **Trap Version** specifies the SNMP version (1 or 2) with which to format traps.

Features

The Features page lists the router's current licensed features and lets you apply additional licenses, as shown in Figure 3-6.

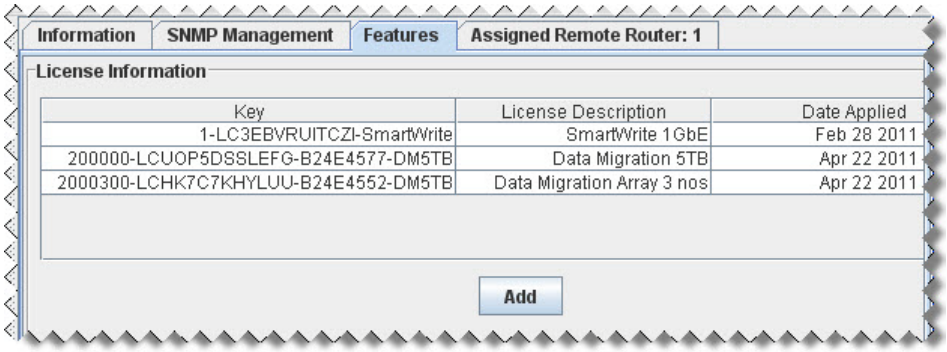


Figure 3-6. Features Page

- **License Information** lists each currently licensed key, description, and date applied.
- To open the Add License Key dialog box and enter a new license key for another feature, click **Add**.

FC Ports

When you click a Fibre Channel port in the router tree, information for that port appears in the right pane. Details for Fibre Channel ports are shown on the following pages:

- "Information" on page 3-13
- "Advanced Configuration" on page 3-14
- "Statistics" on page 3-14
- "Performance" on page 3-15

Information

The Information page provides basic information for the selected Fibre Channel port and allows you to enable and disable the port, as shown in Figure 3-7.

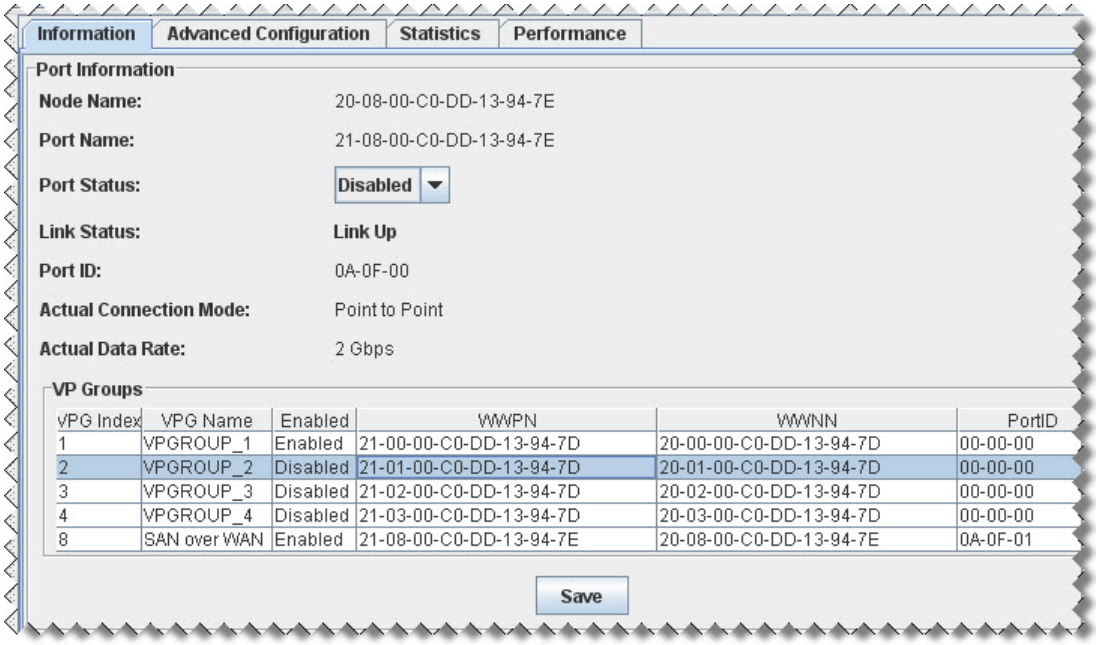

Information
Advanced Configuration
Statistics
Performance
Port Information
Node Name: 20-08-00-C0-DD-13-94-7E
Port Name: 21-08-00-C0-DD-13-94-7E
Port Status: Disabled
Link Status: Link Up
Port ID: 0A-0F-00
Actual Connection Mode: Point to Point
Actual Data Rate: 2 Gbps
VP Groups
VPG Index | VPG Name | Enabled | WWPN | WWNN | PortID
1 | VPGROUP_1 | Enabled | 21-00-00-C0-DD-13-94-7D | 20-00-00-C0-DD-13-94-7D | 00-00-00
2 | VPGROUP_2 | Disabled | 21-01-00-C0-DD-13-94-7D | 20-01-00-C0-DD-13-94-7D | 00-00-00
3 | VPGROUP_3 | Disabled | 21-02-00-C0-DD-13-94-7D | 20-02-00-C0-DD-13-94-7D | 00-00-00
4 | VPGROUP_4 | Disabled | 21-03-00-C0-DD-13-94-7D | 20-03-00-C0-DD-13-94-7D | 00-00-00
8 | SAN over WAN | Enabled | 21-08-00-C0-DD-13-94-7E | 20-08-00-C0-DD-13-94-7E | 0A-0F-01
Save

Figure 3-7. FC Port: Information Page

The Information page contains the following port information:

- **Node Name** shows the world wide node name (WWNN) assigned to the Fibre Channel port.
- **Port Name** shows the world wide port name (WWPN) assigned to the Fibre Channel port.
- **Port Status** lets you change the port status: **Enabled** (online) or **Disabled** (offline). After changing the status, click **Save**. If you choose to disable the port, a warning message appears, letting you know it will disconnect one or more ports. Click **Yes** to disconnect the port, or **No** to cancel the changes.
- **Link Status** shows the link status, either **Link Up** or **Link Down**.
- **Port ID** shows the ID assigned by the Fibre Channel fabric or `AL_PA` if the Fibre Channel port is connected to a private loop.
- **Actual Connection Mode** shows the port's connection mode, either **Point-to-Point** or **Loop**.
- **Actual Data Rate** shows the port's operating data rate when online, either one gigabit per second (`1 Gbps`) or two gigabits per second (`2 Gbps`).

Advanced Configuration

The Advanced Configuration page provides additional configuration options for the selected Fibre Channel port, as shown in Figure 3-8.

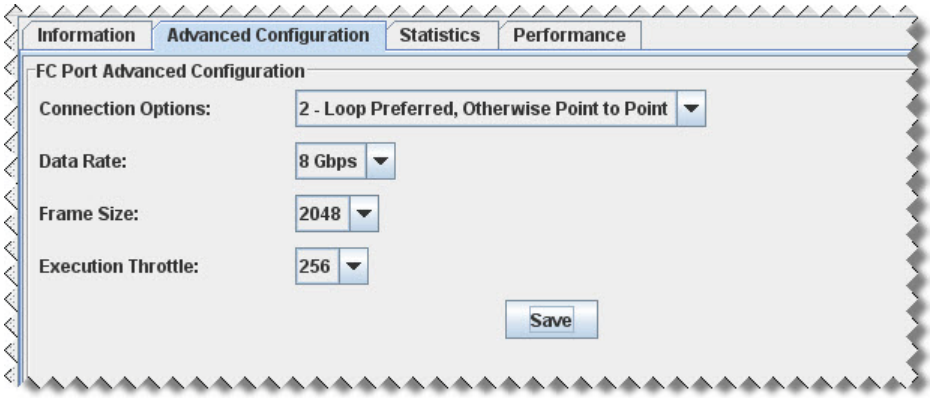


Figure 3-8. FC Port: Advanced Configuration Page

The Advanced Configuration page contains the following options:

- **Connection Options** lists the available connection types: **Loop Only**, **Point to Point Only**, and **Loop Preferred, Otherwise Point to Point**. When a Fibre Channel port is not part of an FCIP route, it only operates in Fibre Channel loop mode.
- **Data Rate** lists the data rate options: **Auto**, **2 Gbps**, **4 Gbps**, or **8 Gbps**. The default is **Auto**.
- **Frame Size** lists the frame size options: **512**, **1048**, or **2048** bytes. The default is **2048**.
- **Execution Throttle** lists values of **16**, **32**, **64**, **128**, or **256**. The default is **64**.
- If you make any changes on this page, click **Save** to preserve those changes.

Statistics

The Statistics page for the selected Fibre Channel port contains a table of parameters and their values, as shown in Figure 3-10.

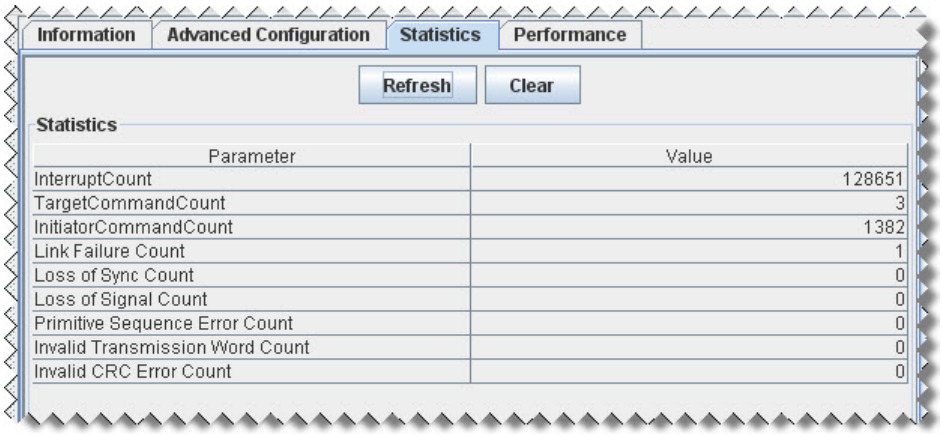


Figure 3-9. FC Port: Statistics Page

- To view the most current statistics for this port, click **Refresh**.
- To reset all statistical values to zero, click **Clear**.

Performance

The Performance page for the selected Fibre Channel port contains a graph depicting read/write performance, as shown in Figure 3-10.

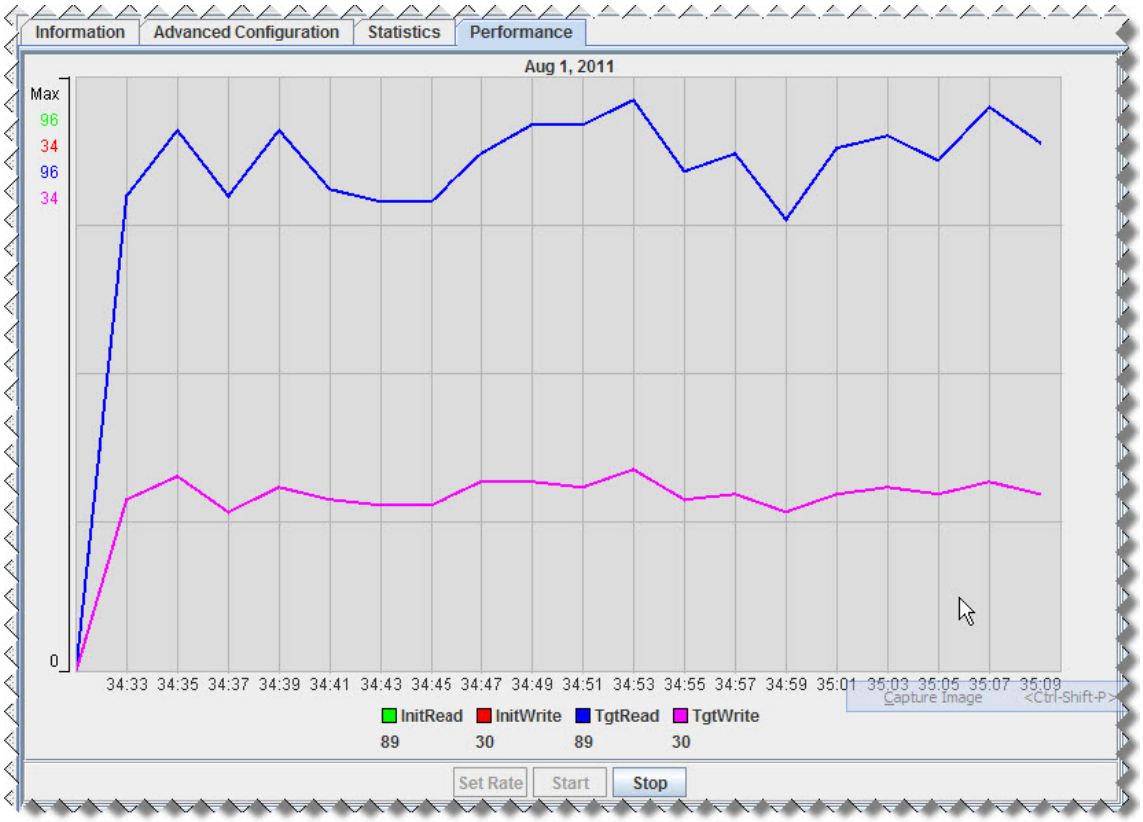


Figure 3-10. FC Port: Performance Page

To monitor Fibre Channel port performance:

1. On the Fibre Channel port's Statistics page, click **Set Rate**.
2. On the Performance Sampling Rate dialog box, type a **Sampling Rate** as an integer from 1 to 30, and then click **OK**.
3. Click **Start** to begin monitoring.

   The performance graph reveals port I/O performance, where:

   - **InitRead** shows the initiator's read performance through the selected Fibre Channel port.
   - **InitWrite** shows the initiator's write performance through the selected Fibre Channel port.
   - **TgtRead** shows the target's read performance through the selected Fibre Channel port.
   - **TgtWrite** shows the target's write performance through the selected Fibre Channel port.
4. To end the performance graphing session, click **Stop**.

iSCSI Ports

When you select an iSCSI port in the router tree, the following tabbed pages appear in the right pane:

- “Information” on page 3-17
- “Advanced Configuration” on page 3-20
- “Statistics” on page 3-22

Information

The Information page for the selected iSCSI port contains three areas: iSCSI Port Information, iSCSI Port Network Settings, and iSNS, as shown in Figure 3-11. If you change any iSCSI port settings on this page, click **Save** to preserve your changes.

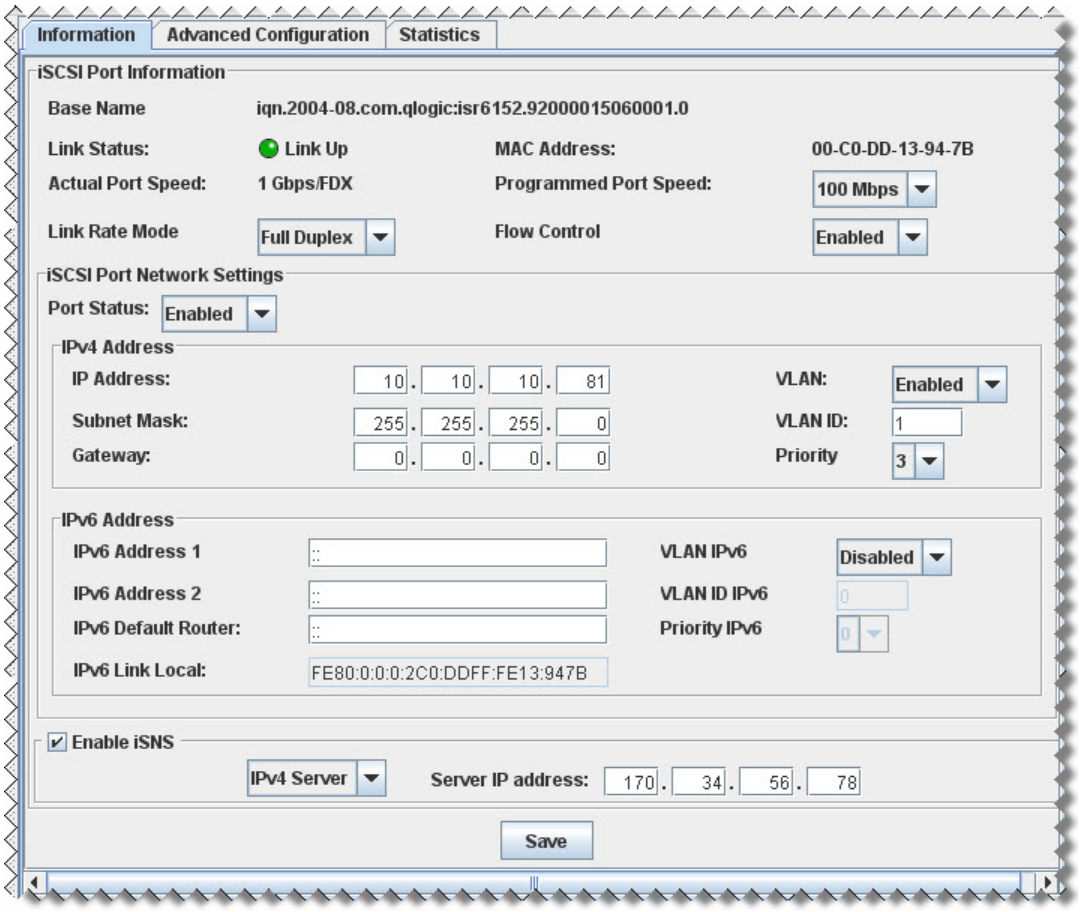


Figure 3-11. iSCSI Port: Information Page

iSCSI Port Information

The iSCSI Port Information area provides the following information and settings:

- **Base Name** shows the full name assigned to the selected iSCSI port.
- **Link Status** identifies the port connection status: **Link Up** or **Link Down**.
- **MAC Address** assigned to the port; this parameter is not editable.
- **Actual Port Speed** indicates the real speed, for example, 1Gbps/FDX. If the port's configuration or connection has changed, the value may not be current. Click the **Refresh** button to view the current speed.
- **Programmed Port Speed** indicates the configured data rate for the port. To change the data rate, select one of the following data rates:
  - **Auto** is the data rate determined by network attachment.
  - **100 Mbps** specifies 100 megabits per second.
  - **1 Gbps** specifies 1 gigabit per second.
- **Link Rate Mode** is available if you selected a specific **Programmed Port Speed** (not **Auto**). Select either **Auto** or **Full Duplex** mode.
- **Flow Control**. If you selected a specific **Programmed Port Speed** (not **Auto**), you can enable or disable flow control.

iSCSI Port Network Settings

The **iSCSI Port Network Settings** include the following:

- **Port Status** allows you to enable or disable the port when the port link is up.
- **IPv4 Address**. When using an IPv4 scheme, define the following parameters:
  - **IP** is the IP to which the port responds. An uninitialized port has an IP of all zeros.
  - **Subnet Mask** is the subnet mask used by the port.
  - **Gateway** is the gateway for the selected port.
  - **VLAN** indicates the virtual LAN configuration: **Disabled** or **Enabled**. Enable VLAN to configure the following:
    - **VLAN ID** specifies an identification value in the range **1** to **4094**.
    - **Priority** defines the priority (**0** to **7**) assigned to this VLAN.
- **IPv6 Address.** When using an IPv6 scheme, define the following:
  - **IPv6 Address 1** is the first user-assigned IPv6 to which the port responds. A value of **::** indicates that an IPv6 has not been assigned.
  - **IPv6 Address 2** is the second user-assigned IPv6 to which the port responds. A value of **::** indicates that an IPv6 has not been assigned.

- **IPv6 Default Router** identifies the default router for the IPv6. Depending on your network configuration, SANsurfer Router Manager can also dynamically set the IPv6 default router.
- **IPv6 Link Local** specifies the IPv6 link local of the port. It is not editable.
- **VLAN IPv6** indicates the VLAN IPv6 configuration as **Disabled** or **Enabled**. When enabled, you can configure the following:
  - **VLAN ID IPv6** contains an identification value in the range **0** to **4094**.
  - **Priority IPv6** defines the priority assigned to this VLAN IPv6. To set the priority, select a value from **0** to **7**.

NOTE:

IPv6 support is available only with hardware version 6 and later and software version 2.4.0.0 and later.

iSNS

The iSNS area of the iSCSI port Information page includes the following:

- Select the **Enable iSNS** check box to enable (or clear the check box to disable) iSNS support. If iSNS is disabled, complete the following:
  - Select either the **IPv4 Server** or **IPv6 Server** as the IP version assigned to the IP server.
  - In the **Server IP Address** box, type the IP assigned to the iSNS server with which this port will communicate.

Advanced Configuration

Use the Advanced Configuration page to configure the router's iSCSI port parameters, security settings, and CHAP settings, as shown in Figure 3-12.

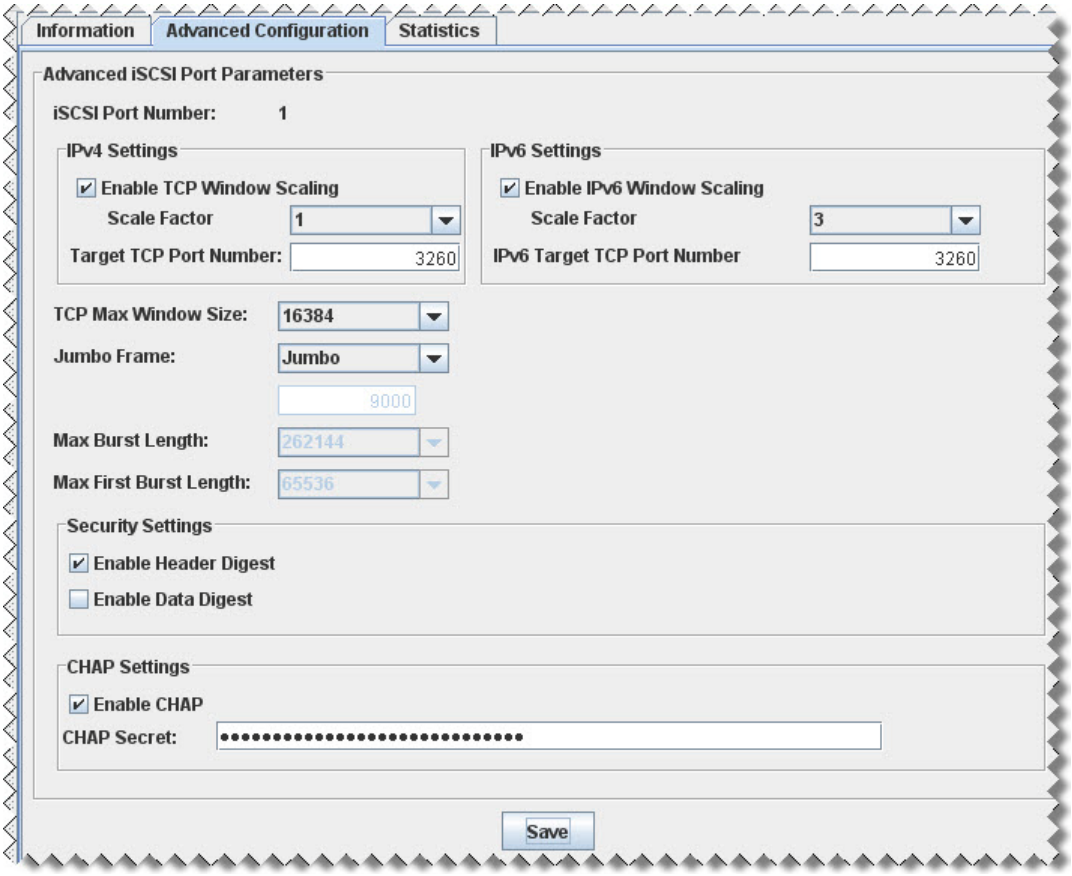


Figure 3-12. iSCSI Port: Advanced Configuration Page

The iSCSI port's Advanced Configuration page provides the following parameters. If you make any changes on this page, you must click **Save** (at the bottom of the page) for the change to take effect.

- **iSCSI Port Number** identifies the iSCSI port number (**1** or **2**).
- **IPv4 Settings** include the following:
  - Select the **Enable TCP Window Scaling** check box to enable this option. If enabled, select the **Scale Factor** (valid values are **0**–**5**).

- **Target TCP Port Number** identifies the TCP port number the router uses to receive iSCSI target commands. The iSCSI community uses TCP port number **3260** by default. If you change this TCP port number, you must also change all corresponding iSCSI initiators connecting to this iSCSI target port.

- **IPv6 Settings** include the following:
  - Select the **Enable IPv6 Window Scaling** check box to use this setting. If enabled, select the **Scale Factor** (valid values are **0**–**5**).
  - **IPv6 Target TCP Port Number** identifies the TCP port number the router uses to receive iSCSI target commands. The iSCSI community uses TCP port number **3260** by default. If you change this TCP port number, you must also change all corresponding iSCSI initiators connecting to this iSCSI target port.
- Select a **TCP Max Window Size** of either **8192**, **16384**, or **32768**.
- Select one of the following **Jumbo Frame** options to indicate the MTU for router frames:
  - **Jumbo** sets the port to support a 9000-byte MTU.
  - **Normal** sets the port to support 1500-byte MTU.
  - **Other** enables the text entry box so that you can specify a different MTU value.

NOTE:

You should specify an MTU size greater than 1500 only when the router is connected to a 1000Mbps Ethernet network.

- **Max Burst Length** specifies the iSCSI maximum burst length, which ranges from **512** to **262144** bytes, depending on iSCSI port configuration.
- **Max First Burst Length** specifies the iSCSI maximum first burst length, which ranges from **512** to **262144** bytes, depending on the iSCSI port configuration.
- **Security Settings** include the following:
  - **Enable Header Digest** enables or disables support for iSCSI header digest. Header digest is an ISCSI feature that adds a validity check field to iSCSI protocol data unit (PDU) headers to verify that no corruption has occurred during transmission of the PDU header. The iSR6152 router supports header digest in its hardware to maximize performance.

    Select the check box to enable this option; clear the check box to disable it.

- **Enable Data Digest** enables or disables support for iSCSI data digest. Data digest is an ISCSI feature that adds a validity check to iSCSI data to verify that no corruption has occurred during transmission of the data. The iSR6152 router supports data digest in its hardware to maximize performance.

  Select the check box to enable this option; clear the check box to disable it.

NOTE:

Enabling either the **Header Digest** or **Data Digest** slows performance, especially on 10Gb iSCSI ports.

- **CHAP Settings** include the following:
  - **Enable CHAP** enables or disables CHAP support. Select the check box to enable this option; clear the check box to disable it.
  - **CHAP Secret** lets you define the CHAP secret used for authenticating an iSCSI client. The box is available only when the **Enable CHAP** check box is selected. The CHAP secret can contain any ASCII characters, and should be at least 16 characters in length.

Statistics

The Statistics page for the selected iSCSI port contains a scrollable table of parameters and values, as shown in Figure 3-13. The table is divided into two sections: the upper section contains statistics that are port specific, and the lower section contains shared statistics (common to all iSCSI ports).

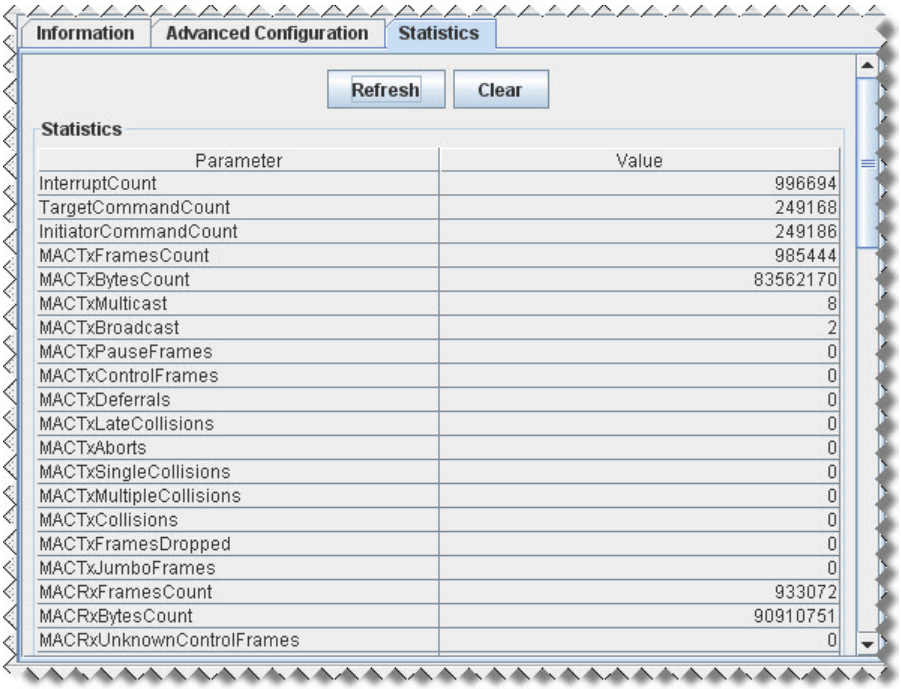


Figure 3-13. iSCSI Port: Statistics Page

To view the most current statistics for this port, click **Refresh** at the top of the page. To reset all values to zero, click **Clear**.

VP Groups

Expand the VP Groups branch in the router tree, and then select a VPGROUP node to view virtual port group details in the right pane, as shown in Figure 3-14.

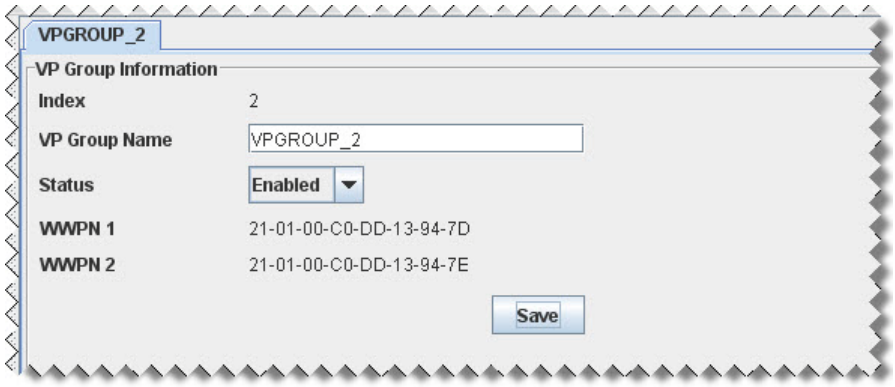


Figure 3-14. VP Groups: VPGROUP_x Page

The **VP Group Information** section includes the following details:

- **Index** is the VPG index within the router.
- **VP Group Name** identifies the name of the selected VP Group. (To change the name, enable the VP Group, type a new name, and then click **Save**. **Refresh** the page to see the new name. For details, see “Renaming a Virtual Port Group” in the help system.)
- **Status** lets you set the VPG status: **Enabled** or **Disabled**. (For details, see “Enabling or Disabling a Virtual Port Group” in the help system.)
- **WWPN *x*** specifies the world wide port name for each Fibre Channel port.

Discovered FC Initiators

Selecting the Discovered FC Initiators branch on the router tree does not provide any information in the right pane. Select a specific discovered Fibre Channel initiator node in the router tree to view the following pages in the right pane:

- “Information” on page 3-24
- “LUN List” on page 3-25

Information

The Information page for a discovered Fibre Channel initiator contains the information shown in Figure 3-15.

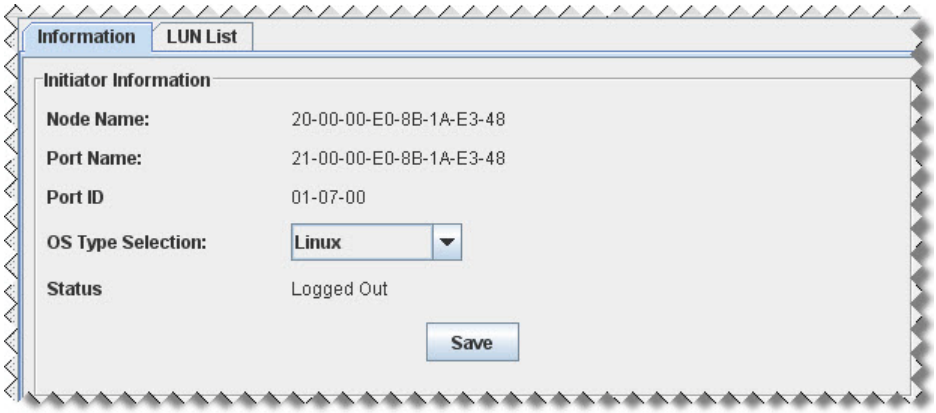


Figure 3-15. Discovered FC Initiators: Information Page

The Information page contains the following elements:

- **Node Name** identifies the initiator’s WWNN.
- **Port Name** identifies the initiator’s WWPN.
- **Port ID** identifies the Fibre Channel switch-assigned port identifier.

- **OS Type Selection** provides options to select the operating system type for the discovered initiator. The iSR6152 router uses the OS type to enable OS-specific commands. Type options include: **Other**, **MS Windows**, **Linux**, **HPUX**, **Mac**, **Solaris**, **VMware**, **OpenVMS**, and **Windows 2008**.
- **Status** is the activity status for the selected initiator, either **Logged In** (online) or **Logged Out** (offline).

If you change the **OS Type Selection** value, click **Save** to preserve this setting.

LUN List

The LUN list for the selected Fibre Channel discovered initiator includes details for each LUN, as shown in Figure 3-16.

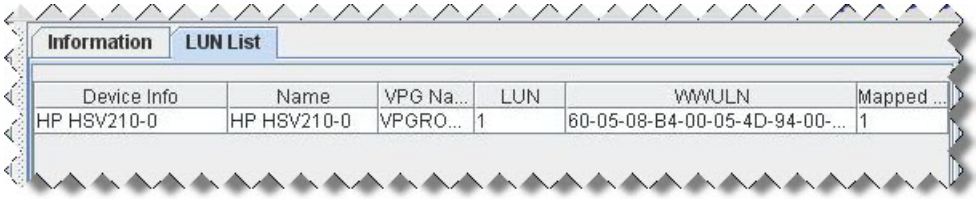


Figure 3-16. Discovered FC Initiators: LUN List Page

The LUN List page includes the following information:

- **Device Info** indicates the name of the array information from which the LUN is masked to this initiator.
- **Name** identifies the array from which the LUN is masked to this initiator.
- **VPG_Name** identifies the VPGroup name from which the LUN is mapped to the initiator.
- **LUN** shows the LUN ID at which it is mapped to the router from the array.
- **WWULN** identifies the LUN's WWULN.
- **Mapped ID** identifies the LUN ID at which the LUN is mapped to the initiator from the router.

Discovered iSCSI Initiators

Selecting the Discovered iSCSI Initiators branch on the router tree does not provide any information in the right pane. Select a discovered iSCSI initiator in the router tree to view the following pages in the right pane:

- "Information" on page 3-26
- "LUN List" on page 3-27

Information

The Information page for a discovered iSCSI initiator contains two sections: **Initiator Information** and **CHAP Settings**, as shown in Figure 3-17.

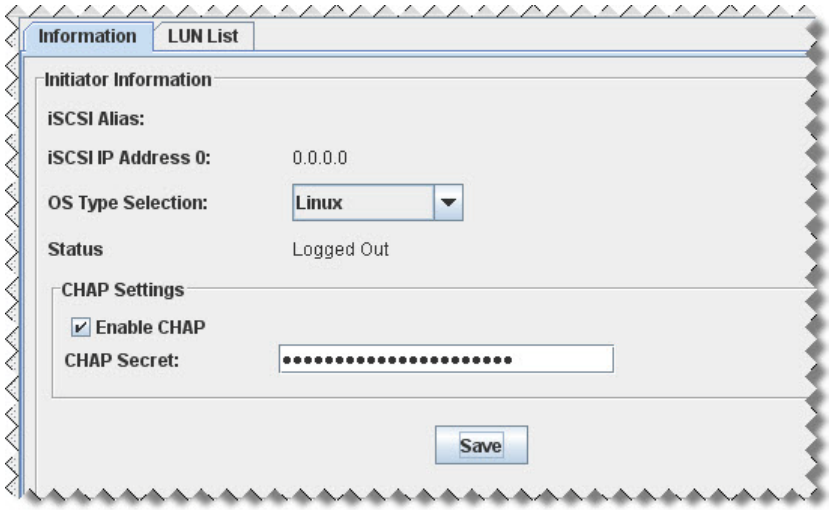


Figure 3-17. Discovered iSCSI Initiators: Information Page

The **Initiator Information** section provides the following:

- **iSCSI Alias** specifies the iSCSI initiator's alias, which the initiator provides when it logs into the iSR6152 router.
- **iSCSI IP** shows the IP of the discovered iSCSI initiator.
- **iSCSI IPv6 IP** shows the IPv6 IP address of the discovered iSCSI initiator. (This information is displayed only if the initiator is logged in using an IPv6 address.)
- **OS Type Selection** provides options to select the operating system type for the discovered initiator. The iSR6152 router uses the OS type to enable OS-specific commands. Type options include: **Other**, **MS Windows**, **Linux**, **HPUX**, **Mac**, **Solaris**, **VMware**, and **OpenVMS**.
- **Status** indicates the activity status for the selected initiator.

The **CHAP Settings** section provides the following:

- **Enable CHAP** enables or disables CHAP support. Select the check box to enable this option; clear the check box to disable it.
- **CHAP Secret** lets you define the CHAP secret used for authenticating an iSCSI client. The box is available only when the **Enable CHAP** check box is selected.

NOTE:

To apply any setting changes, click **Save**.

LUN List

The LUN List page lists LUNs mapped to the iSCSI initiator, as shown in Figure 3-18.

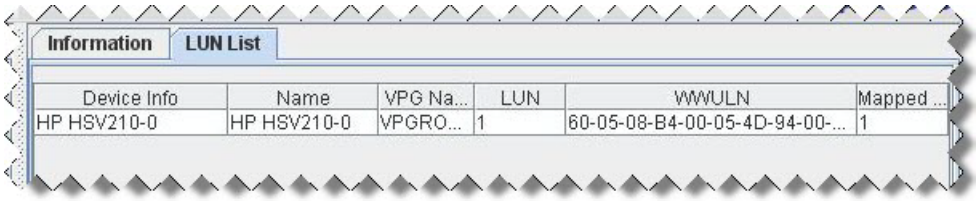


Figure 3-18. Discovered iSCSI Initiator: LUN List Page

The LUN List page provides the following parameters:

- **Device Info** is the information provided by the target LUN as a result of issuing a SCSI INQUIRY command.
- **Name** is the target name. For Fibre Channel targets, the name is the WWPN.
- **VPG Name** is the name of the virtual port group (VPG).
- **LUN** is the logical unit number.
- **WWULN** is the world wide unique LUN name (WWULN), also provided on page 83 of an INQUIRY command.

FC Discovered Targets

Selecting the FC Discovered Targets branch in the router tree shows two pages in the right pane:

- “FC Presented Targets” on page 3-28
- “iSCSI Presented Target List” on page 3-28

Expand the FC Discovered Targets branch, and then select a specific target node to view the following additional pages in the right pane for that target:

- “Information” on page 3-29
- “iSCSI Presented Target” on page 3-30

Expand the VPG branch under the target node, and then select a specific LUN to view the following additional page in the right pane for that VPG:

- “Discovered LUN Information” on page 3-31

FC Presented Targets

The FC Presented Targets page shows information for each Fibre Channel presented target, as shown in Figure 3-19.

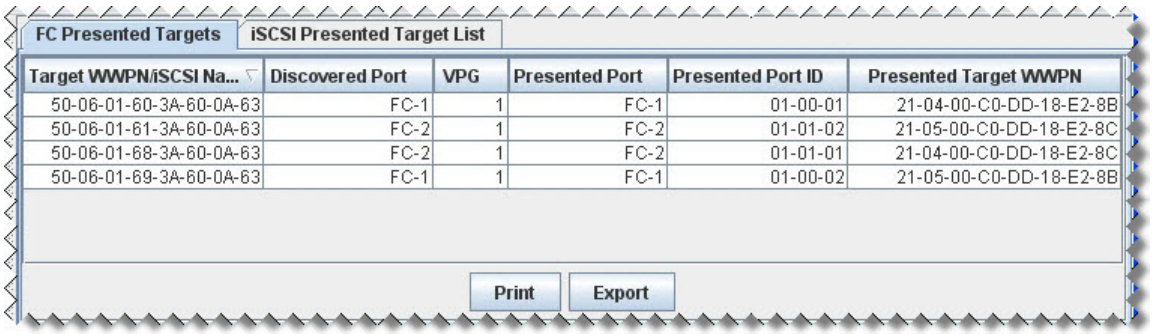


Figure 3-19. FC Discovered Targets: FC Presented Targets Page

The FC Presented Targets page lists the following data for each Fibre Channel presented target:

- Target WWPN/iSCSI Name
- Discovered Port
- VPG
- Presented Port
- Presented Port ID
- Presented Target WWPN

To send the list of presented targets to a printer, click **Print**. To save the list to a `.CSV` file, click **Export**.

iSCSI Presented Target List

The iSCSI Presented Target List page (when viewed from the FC Discovered Targets node) shows information for each iSCSI presented target, as shown in Figure 3-20.

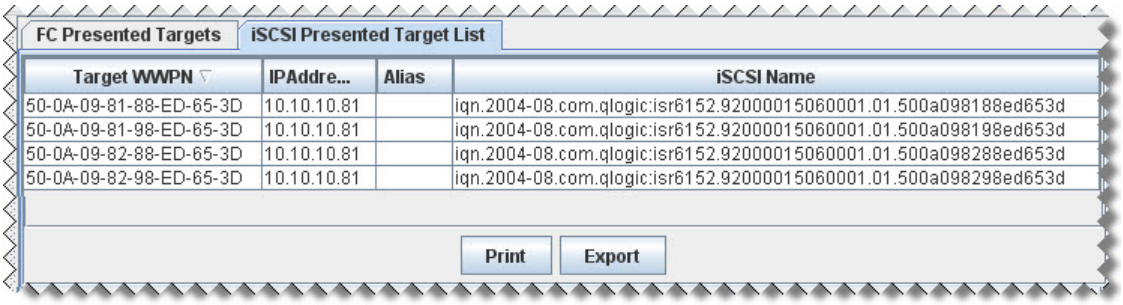


Figure 3-20. FC Discovered Targets: iSCSI Presented Target List Page

The iSCSI Presented Target List page shows the following data for each iSCSI presented target:

- Target WWPN
- IP Address
- Alias
- iSCSI Name

To send the list of presented targets to a printer, click **Print**. To save the list to a `.CSV` file, click **Export**.

Information

The Information page for a Fibre Channel discovered target contains non-editable product data, as shown in Figure 3-21.

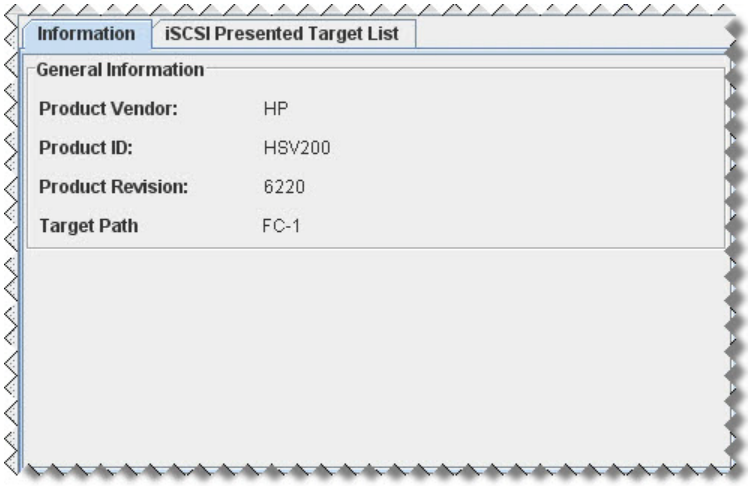


Figure 3-21. FC Discovered Targets: Information Page

The Information page contains the following FC target information:

- **Product Vendor** is the product vendor as reported by the SCSI INQUIRY command.
- **Product ID** is the product ID as reported by the SCSI INQUIRY command.
- **Product Revision** is the product revision as reported by the SCSI INQUIRY command.
- **Target Path** specifies either the router port on which the target is discovered, or **Offline**.

iSCSI Presented Target

The iSCSI Presented Target page provides detailed Fibre Channel target information and a list of the iSCSI presentations of the target, as shown in Figure 3-22.

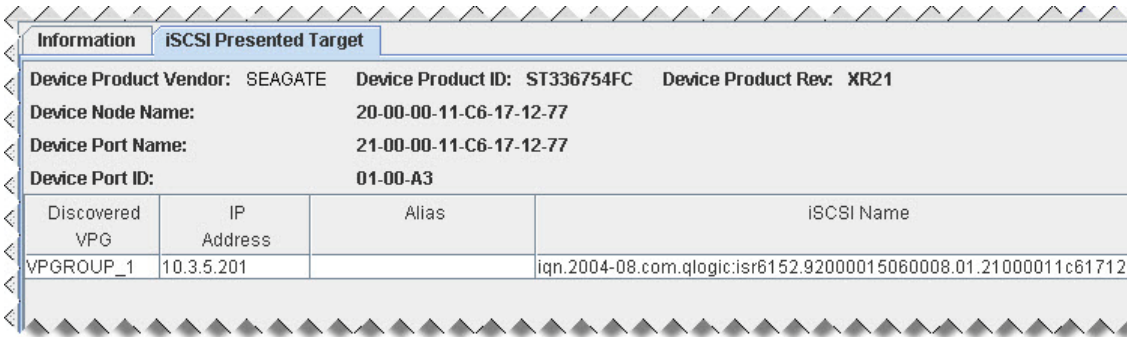


Figure 3-22. FC Discovered Targets: iSCSI Presented Target Page

The iSCSI Presented Target page contains the following information:

- **Device Product Vendor** is the vendor name of the target device as reported by the SCSI INQUIRY command.
- **Device Product ID** is the product ID name of the target device as reported by the SCSI INQUIRY command.
- **Device Product Rev** is the product revision of the target device as reported by the SCSI INQUIRY command.
- **Device Node Name** is the WWNN of the target device.
- **Device Port Name** is the WWPN of the target device.
- **Device Port ID** is the target device's port ID.
- **Target WWPN** is the world wide port name of the target.
- **IP** is the IP on which the target is presented.

- **Alias** is the iSCSI alias of the presented target.
- **iSCSI Name** is the presented target's iSCSI name.

Discovered LUN Information

For an FC Discovered Target, select a target, expand the VPGs below that target, and then select a LUN to view the Discovered LUN Information page in the right pane. This page provides details on the selected Fibre Channel target LUN.

Figure 3-23 shows the Discovered LUN Information page.

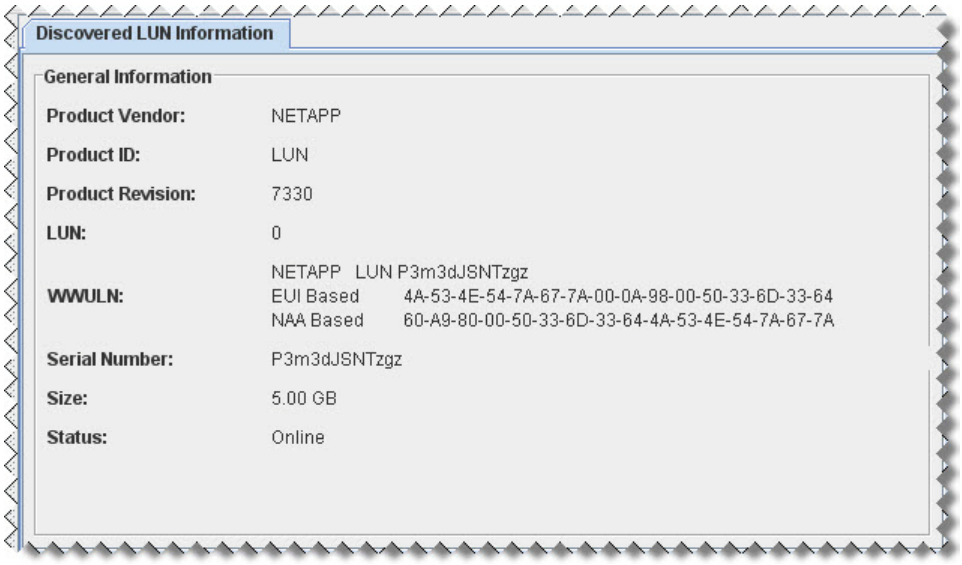


Figure 3-23. FC Discovered Targets: Discovered LUN Information Page

The Discovered LUN Information page contains the following information:

- **Product Vendor** is the vendor name of the LUN as reported by the SCSI INQUIRY command.
- **Product ID** is the product ID of the LUN as reported by the SCSI INQUIRY command.
- **Product Revision** is the product revision of the LUN as reported by the SCSI INQUIRY command.
- **LUN** is the logical unit number.
- **WWULN** is the world wide unique name of the LUN as reported on page 0x83 of the SCSI INQUIRY command. It also identifies the extended unique identifier (EUI) and name address authority (NAA) based WWULNs.
- **Serial Number** is the LUN serial number.

- **Size** indicates the LUN size in GB.
- **Status** is the current state of the LUN, either **Online** or **Offline**.

iSCSI Discovered Targets

The iSCSI Discovered Targets branch on the router tree does not provide any information in the right pane. Select a discovered target to view the Information page for that target, as shown in Figure 3-24.

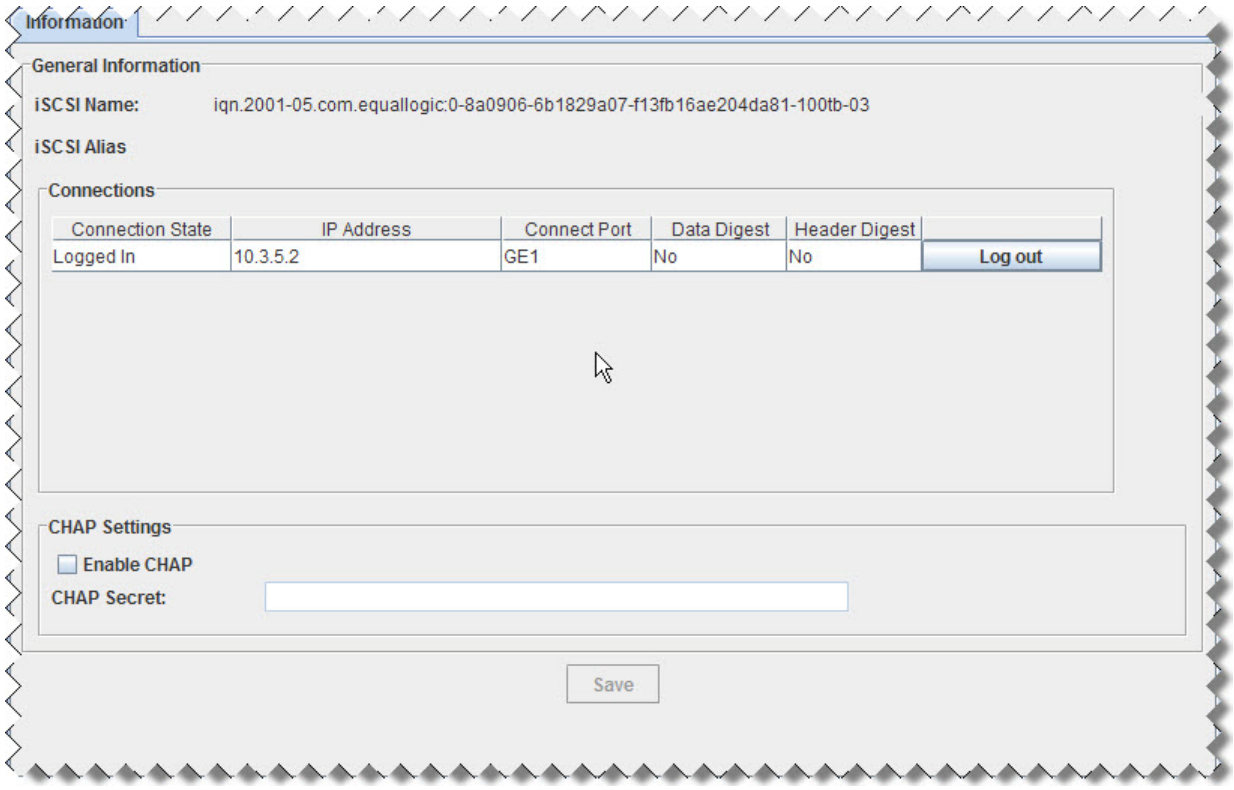


Figure 3-24. iSCSI Discovered Targets: Information Page

Information

The Information page contains two sections: **General Information** and **CHAP Settings**.

- **General Information** includes the following:
  - **Product Vendor** shows the product vendor as reported by the SCSI INQUIRY command.
  - **Product ID** shows the product ID as reported by the SCSI INQUIRY command.

- **Product Revision** shows the product revision as reported by the SCSI INQUIRY command.
- **IP** shows the IP of the presented iSCSI target.
- **iSCSI Name** shows the presented iSCSI target's name.
- **Target Path** shows the router's iSCSI port where the target was discovered.

- **CHAP Settings** provides an option you can use to set the CHAP option as follows:
  - **Enable CHAP** check box allows you to enable CHAP when connecting to this target.
  - **CHAP Secret** is the string used for the CHAP secret when connecting to this target. The box is available only when the **Enable CHAP** check box is selected.

NOTE:

If you change the **CHAP Settings**, you must click **Save** for the change to take effect.

Arrays

Expand the Arrays branch in the left pane, and then select a specific storage array node to view the Information page for that array in the right pane. Figure 3-25 shows an example.

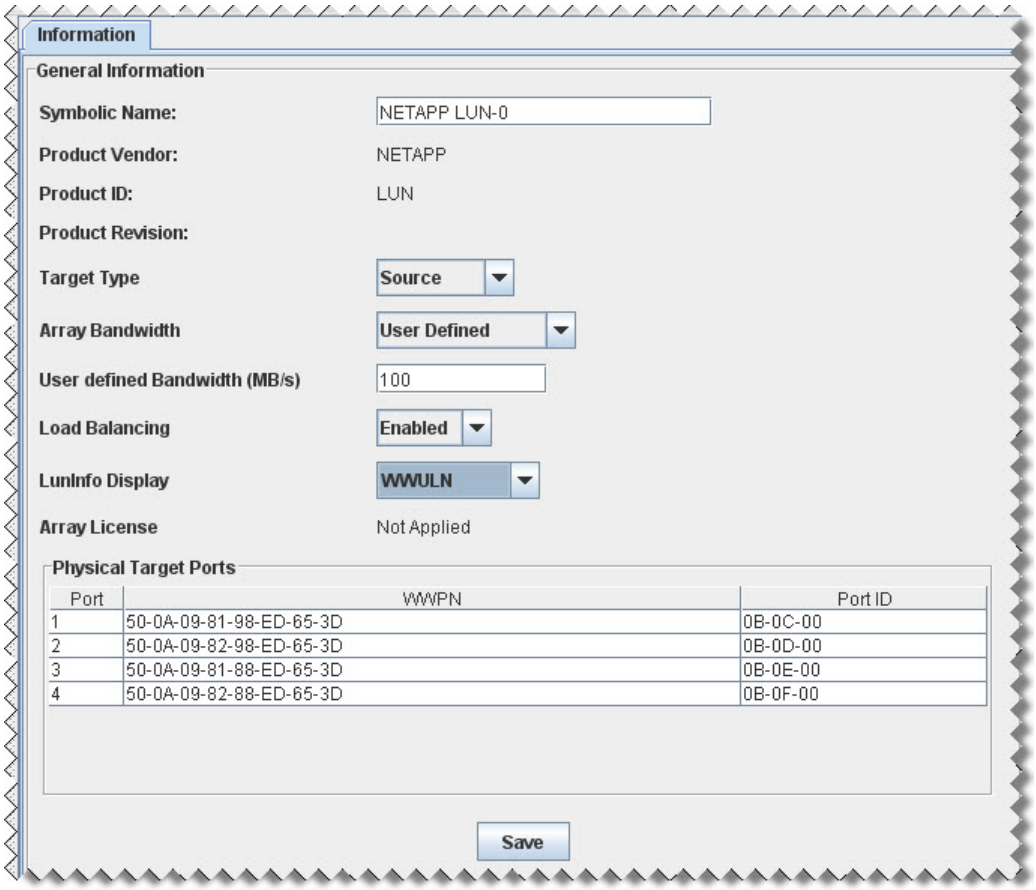


Figure 3-25. Arrays: Information Page

The Information page for a storage array contains the following general information, some of which is editable:

- **Symbolic Name** is the user-defined array name.
- **Product Vendor** is the product vendor as reported by the SCSI INQUIRY command.
- **Product ID** is the product ID of the LUN as reported by the SCSI INQUIRY command.
- **Product Revision** is the product revision of the LUN as reported by the SCSI INQUIRY command.

- **Target Type** for the array can be specified as either **Source**, **Destination**, **Src+Dest** (both source and destination type), or **None**.
- **Array Bandwidth** can be specified as one of the following: **Slow (50BMB/s)**, **Medium (200BMB/s)**, **Fast (1600MB/s)**, **User Defined**, or **Max Available**.
- **User-defined Bandwidth (MB/s)** becomes available if the selected **Array Bandwidth** setting is **User Defined**. Type an integer in the box.
- **Load Balancing** is either **Enabled** or **Disabled** for this array.
- **LUN Info Display** determines whether the array's LUNs are identified by **LUN ID**, **WWULN**, or **Serial Number**.
- **Array License** shows whether a data migration array license has been applied to the array.
- **Physical Target Ports** information includes:
  - **Port** specifies the target port number.
  - **WWPN** specifies the target port WWPN.
  - **Port ID** indicates the ID assigned by the Fibre Channel fabric or AL_PA when connected on a private loop.

NOTE:

To apply changes made to this page, click **Save**.

iSCSI Presented Targets

Selecting the iSCSI Presented Targets branch on the router tree does not provide any information in the right pane. Expand the iSCSI Presented Targets branch, and then select a specific presented target to view the Information page for that target in the right pane.

Information

The Information page for an iSCSI presented target contains the information and options shown in Figure 3-26.

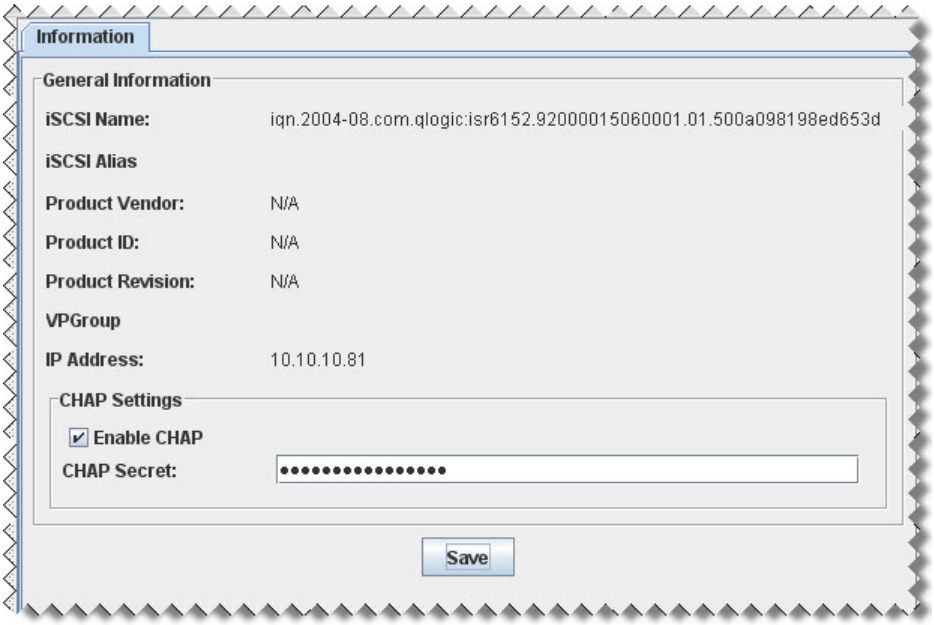


Figure 3-26. iSCSI Presented Targets: Information Page

Information for the selected iSCSI presented target includes:

- **iSCSI Name** is the presented iSCSI target's name.
- **iSCSI Alias** is the presented iSCSI target's alias. You can change the alias by typing a valid name in the box.
- **Product Vendor** is the product vendor as reported by the SCSI INQUIRY command.
- **Product ID** is the product ID as reported by the SCSI INQUIRY command.
- **Product Revision** is the product revision as reported by the SCSI INQUIRY command.
- **VPGroup** specifies the virtual port group on which the Fibre Channel target is located.
- **IP Address** is the address of the presented iSCSI target.
- **CHAP Settings** options include the following:
  - **Enable CHAP** enables or disables CHAP support. Select the check box to enable this option; clear the check box to disable it.
  - **CHAP Secret** lets you define the CHAP secret used for authenticating an iSCSI client. The box is available only when the **Enable CHAP** check box is selected.

NOTE:

To apply changes made to this window, click **Save**.

FCIP Routes

Expand the FCIP Routes branch in the left pane, and then select a specific FCIP Route Info node to view the following pages for that route in the right pane:

- “FCIP Route Info” on page 3-38
- “Statistics” on page 3-42

FCIP Route Info

The FCIP Route Info page contains the information that defines the selected FCIP route, as shown in Figure 3-27.

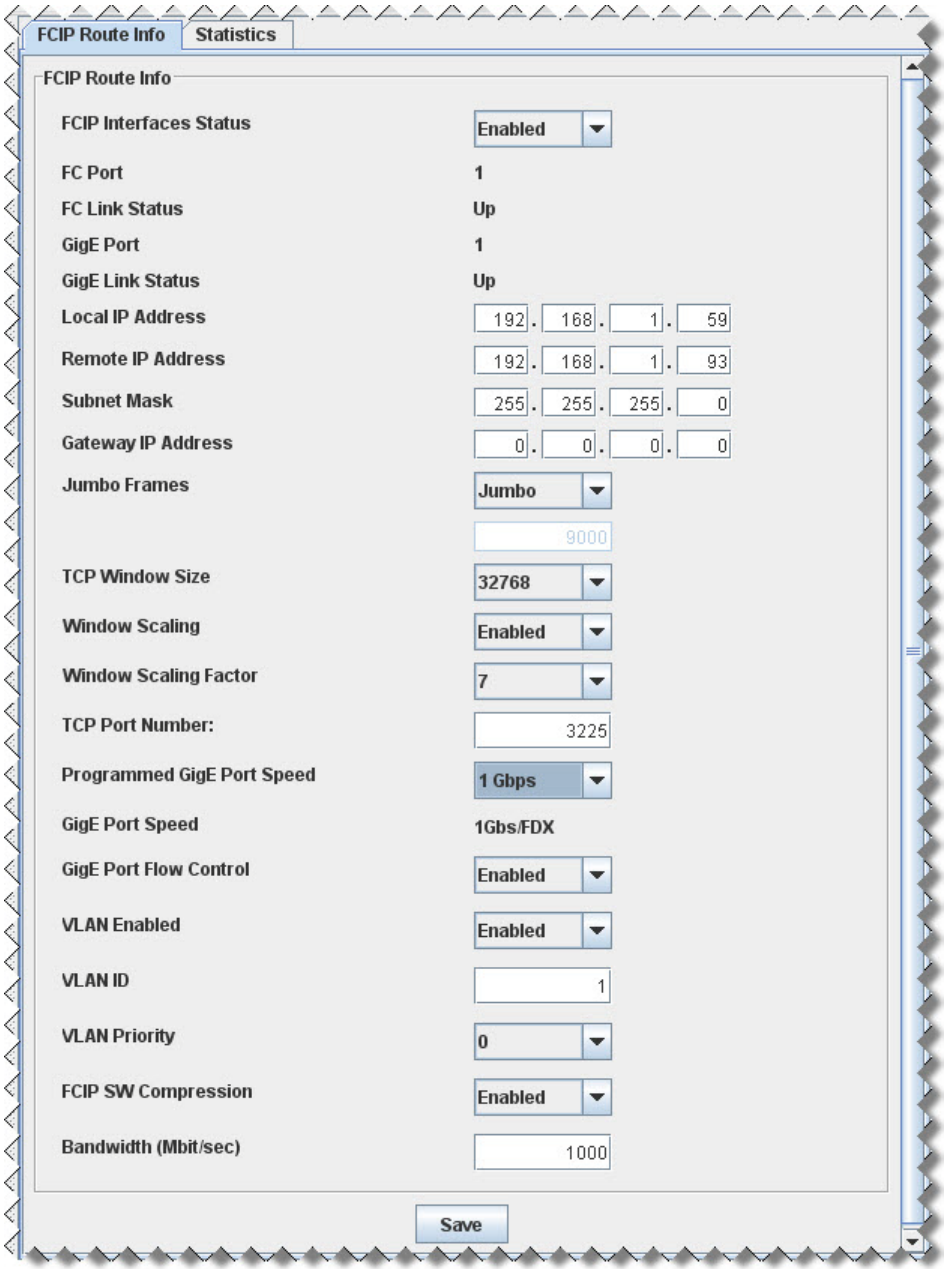


Figure 3-27. FCIP Routes: FCIP Route Info Page

The FCIP Route Info page contains the following information and configurable parameters for the currently selected FCIP route. If you make any changes to the FCIP route configuration, click the **Save** button at the bottom of the page.

- **FCIP Interfaces Status** allows you to enable or disable the FCIP route. Disabling the route places the Fibre Channel and GbE ports in a down state, but still retains all route configuration parameters.
- **FC Port** identifies the Fibre Channel port number assigned to the FCIP route when it was created.
- **FC Link Status** indicates the link state (**Up** or **Down**) of the FCIP route:
  - **Up** indicates the FCIP route is available for use. An **FC Link Status** of **Up** requires a TCP connection between the two routers, and that the corresponding Fibre Channel ports of the routers are up (link established).
  - **Down** indicates the FCIP route is not available for use.
- **GigE Port** identifies the gigabit Ethernet (GbE) port number assigned to the FCIP route when it was created.
- **GigE Link Status** indicates the link state (up or down) of the GbE port assigned to the FCIP route.
  - **Up** indicates the GbE port is available for use (link established).
  - **Down** indicates the GbE port is not available for use (cable disconnected, negotiation failure, and so on).
- **Local IP Address** allows you to define the IP to be used by the GbE port of the local router. The local router for FCIP traffic generates IP datagrams with the **Source IP Address** set to the value of the **Local IP Address**. An uninitialized port shows an IP of all zeros.
- **Remote IP Address** allows you to define the IP of the GbE port on the remote router. The local router for FCIP traffic generates IP datagrams with the Destination IP Address set to the value of the Remote IP Address.
- **Subnet Mask** allows you to define the subnet mask used by the GbE port for the local and remote IP addresses.
- **Gateway IP** indicates the IP address of the entrance to another network. If the IP addresses of the FCIP routers are not in the same network, the gateway IP address specifies where the routers send their **t**raffic to be forwarded by the gateway.

- **Jumbo Frames** indicates that the use of jumbo Ethernet frames is enabled. Jumbo frames are Ethernet frames with payloads greater than 1500 bytes, with a maximum size of 9000 bytes. Using jumbo frames requires all the network equipment in the route to be configured for jumbo frames. Jumbo frames can increase bandwidth in some networks because the number of headers to be processed is decreased when each frame contains more user data. However, some networks may defer or discard jumbo frames when their buffer resources run low.

  Select one of the following options for jumbo frames:

  - **Jumbo** improves data transfer performance, but requires all switches, routers, and devices to support and be configured for jumbo frames. If any of the equipment is not configured for jumbo frames, that device truncates frames that exceed its MTU size (typically 1,500 bytes).
  - **Normal** is a common setting that works in typical configurations. If you cannot configure all the network equipment in a route for jumbo frames, select **Normal** (maximum of 1,500 bytes per frame).
  - **Other** enables the setting of the frame payload size to a specific value. This option is typically required when IP traffic is encrypted, because the encryption adds overhead to each frame and reduces the size of the available frame payload (usually less than 1,500 bytes). If the network has some equipment with an MTU size less than 1,500, select **Other** and set the size to the smallest MTU of the network equipment comprising the route.

NOTE:

Use jumbo frames only with 1000Mbps Ethernet networks.

- **TCP Window Size** indicates the maximum size (in bytes) of the TCP window, which is the number of unacknowledged bytes. TCP transmits data to the remote peer until the window is full (number of unacknowledged bytes equals TCP window size). After the window is full, new data transmission is halted until acknowledgements for sent data are received from the remote peer.
- **Window Scaling** indicates whether TCP window scaling is enabled or disabled. TCP window scaling applies a multiplier to the **TCP Window Size** to extend the TCP window size beyond the maximum value originally defined for TCP.
- **Window Scaling Factor** is the multiplier (0–9) to be applied to the TCP Window Size when **Window Scaling** is enabled, as shown in Table 3-1.

Table 3-1. TCP Window Scaling Factor

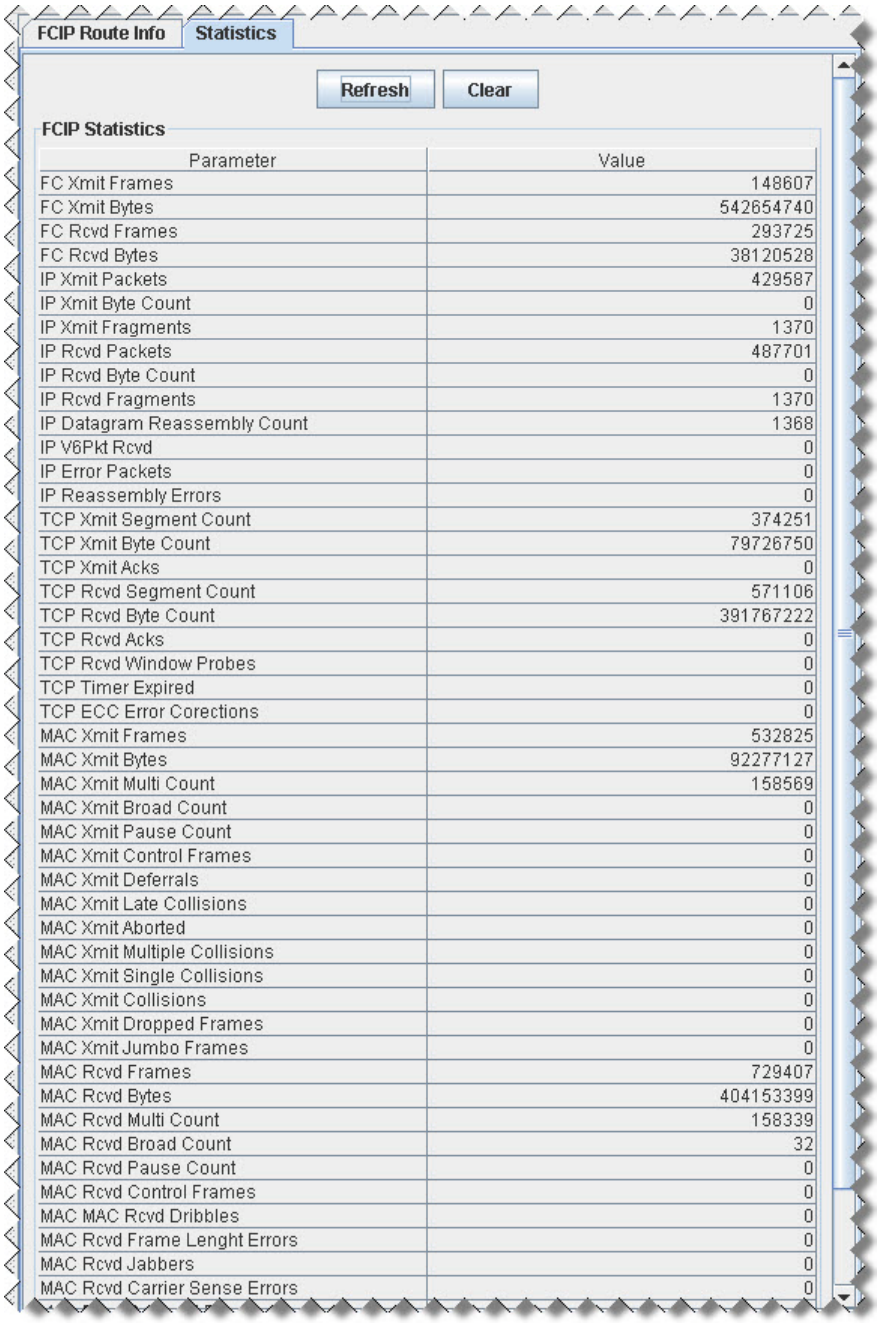
TCP Window Size (in bytes)	Scale Factor	Actual Window Size (in bytes)
32767	0 (scaling disabled)	32,767
32767	1	64,534
32767	2	131,068
32767	3	262,136
32767	4	524,272
32767	5	1,048,544
32767	6	2,097,088
32767	7	4,194,176
32767	8	8,388,352
32767	9	16,776,704

- **TCP Port Number** identifies the TCP port number on which the FCIP server listens for TCP connections; the default value for FCIP is **3225**.
- **Programmed GigE Port Speed** indicates the value specified for the GbE port speed by the user when the FCIP route was created or modified. Select one of the following values:
  - **Auto** allows the router to negotiate the link speed with the peer port. The router advertises speeds of 1Gbps and 100Mbps.
  - **100 Mbps** forces the port link speed to 100Mbps.
  - **1 Gbps** forces the link speed to 1Gbps. With this option, the router negotiates with the peer port, but only advertises a speed of 1Gbps.
- **GigE Port Speed** indicates the actual value of the GbE port speed. Typically, this value is the same as the **Programmed GigE Port Speed**. However, when the **Programmed GigE Port Speed** is **Auto**, this field indicates the negotiated port speed.
- **GigE Port Flow Control** indicates whether flow control (IEEE802.3x Pause) is enabled or disabled. When **Enabled** (the default), the corresponding GbE port sends and receives Ethernet pause frames. When pause frames are received, the port suspends sending Ethernet traffic. When the port runs low on receive buffers, it sends a pause frame.

- **VLAN Enabled** indicates whether the use of virtual LANs is enabled or disabled. The default is **Disabled**.
- **VLAN ID** specifies the VLAN ID assigned to the FCIP route when VLAN use is enabled. The VLAN ID segregates traffic in a LAN, and must be the same on both routers participating in the FCIP route (local and remote routers must be using same VLAN ID) and on the Ethernet switches.
- **VLAN Priority** specifies the priority of the VLAN assigned to the FCIP route when VLAN use is enabled. In a network with multiple VLANs, the **VLAN Priority** box prioritizes Ethernet traffic by giving higher preference to traffic in the network over non-VLAN traffic and traffic from VLANs with lower priorities. Level 1 is the lowest priority, level 7 is the highest priority, and level 0 specifies no VLAN.
- **Error Detect Timeout** sets the error detect timeout value by selecting one of five options: **1** to **5** seconds. The default is one second.
- **Resource Allocate Timeout** sets the resource allocate timeout value to one of five options: **1** to **5** seconds. The default is one second.
- **FCIP Timestamp** enables or disables FCIP timestamps. The default is **Enabled**.
- **FCIP SW Compression** indicates whether software compression is enabled, disabled, or automatic (the default is **Disabled**). Depending on the data, software compression may result in lower bandwidth operations. If the data are highly compressible, the compressed FCIP PDU is significantly smaller than the original Fibre Channel frame.
- **Bandwidth (Mbit/sec)** defines the maximum bandwidth (in megabits per second) the GbE port will use during transmits. Supported values range from **1** to **1000** Mbps. Use this setting to limit the bandwidth used by the FCIP route so it does not consume all the available link bandwidth. For example, if the slowest link in the WAN is a DS-3 link, the maximum available bandwidth is 45 megabits per second. To limit the FCIP route to 33 percent of the overall link bandwidth, set the bandwidth to 15 megabits per second.

Statistics

The Statistics page for FCIP routes lists parameters and values, as shown in Figure 3-28. To update the statistics, click **Refresh**. To reset all values to zero, click **Clear**.



Parameter	Value
FC Xmit Frames	148607
FC Xmit Bytes	542654740
FC Rcvd Frames	293725
FC Rcvd Bytes	38120528
IP Xmit Packets	429587
IP Xmit Byte Count	0
IP Xmit Fragments	1370
IP Rcvd Packets	487701
IP Rcvd Byte Count	0
IP Rcvd Fragments	1370
IP Datagram Reassembly Count	1368
IP V6Pkt Rcvd	0
IP Error Packets	0
IP Reassembly Errors	0
TCP Xmit Segment Count	374251
TCP Xmit Byte Count	79726750
TCP Xmit Acks	0
TCP Rcvd Segment Count	571106
TCP Rcvd Byte Count	391767222
TCP Rcvd Acks	0
TCP Rcvd Window Probes	0
TCP Timer Expired	0
TCP ECC Error Corections	0
MAC Xmit Frames	532825
MAC Xmit Bytes	92277127
MAC Xmit Multi Count	158569
MAC Xmit Broad Count	0
MAC Xmit Pause Count	0
MAC Xmit Control Frames	0
MAC Xmit Deferrals	0
MAC Xmit Late Collisions	0
MAC Xmit Aborted	0
MAC Xmit Multiple Collisions	0
MAC Xmit Single Collisions	0
MAC Xmit Collisions	0
MAC Xmit Dropped Frames	0
MAC Xmit Jumbo Frames	0
MAC Rcvd Frames	729407
MAC Rcvd Bytes	404153399
MAC Rcvd Multi Count	158339
MAC Rcvd Broad Count	32
MAC Rcvd Pause Count	0
MAC Rcvd Control Frames	0
MAC MAC Rcvd Dribbles	0
MAC Rcvd Frame Lenght Errors	0
MAC Rcvd Jabbers	0
MAC Rcvd Carrier Sense Errors	0

Figure 3-28. FCIP Routes: Statistics Page

4 Viewing Service Information

SANsurfer Router Manager lets you monitor and manage licensed features such as data migration by selecting components on the Services page in the tree in the left pane (for details, see “Services Tree” on page 2-13). Information, configuration, and data for the selected component appears in the right pane.

The following sections describe these components:

- “Router iSR6152” on page 4-1
- “Data Migration Jobs” on page 4-3

Router iSR6152

The top of the SANsurfer Router Manager services tree in the left pane identifies the connected iSR6152 by serial number. Click the router in the left pane to view the following tabbed page in the right pane:

- “Data Migration Info” on page 4-2

Data Migration Info

The Data Migration Info page for the router services contains data migration license usage data, as shown in Figure 4-1.

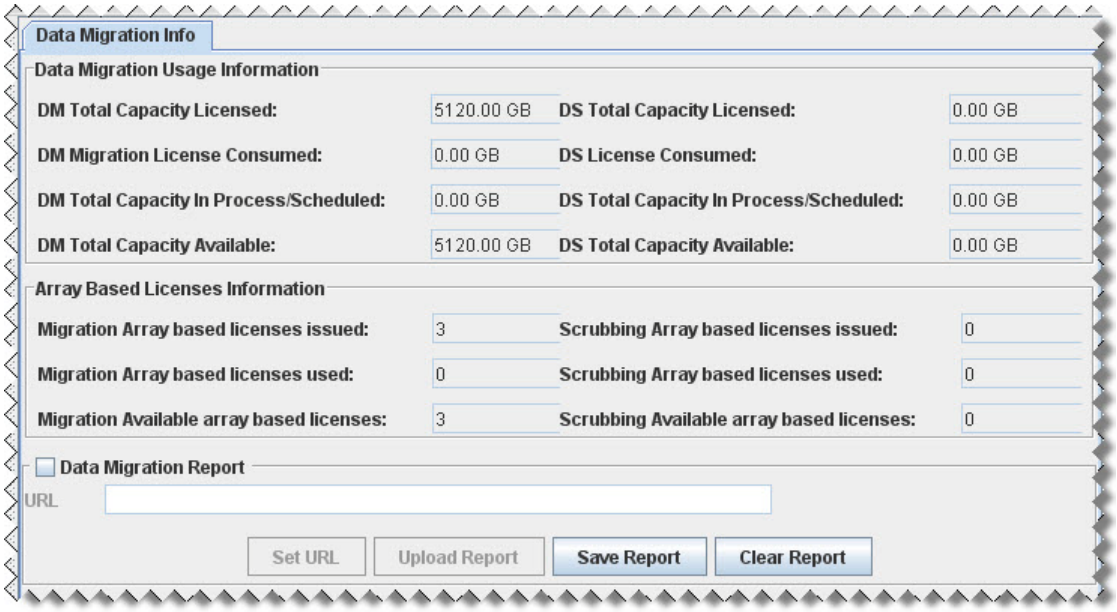


Figure 4-1. Data Migration Info Page

The Data Migration Info page contains the following information:

- The **Data Migration Usage Information** section provides the amounts of capacity licensed, consumed, scheduled or in-process, and available.
- The **Array Based Licenses Information** section provides quantities of migration array-based licenses issued, used, and available.
- Select the **Data Migration Report** check box to specify settings for uploading, saving, or clearing information in the data migration report. In the **URL** box, type the URL where you want to save or upload the report. Then click the buttons to specify the following options:
  - Click **Set URL** to save the event notification address (specified in the **URL** box) that indicates where you want to upload the report. If you do not click **Set URL**, the URL is not saved.
  - Click **Upload Report** to send the report to the Web page indicated in the **URL** box.
  - Click **Save Report** to create a report and save it in the router's `ftp` folder.
  - Click **Clear Report** to delete all reports from the router's `ftp` folder.

Data Migration Jobs

When you click a data migration job in the services tree, information for that job appears in the right pane. Details for data migration jobs are shown on the following pages:

- "Active Data Migration Jobs" on page 4-3
- "Synchronizing Jobs" on page 4-4
- "Completed Data Migration Jobs" on page 4-4

Active Data Migration Jobs

The Active Data Migration Jobs page provides data for the currently running data migration jobs, as shown in Figure 4-2.

Figure 4-2. Data Migration Jobs: Active Data Migration Jobs Page

The Active Data Migration Jobs page contains the following information:

- **Group Name** shows the migration group name for which the migration, compare, or scrubbing job is scheduled.
- **Job ID** identifies by number the scheduled migration, compare, or scrubbing job.
- **Job Name** identifies by name the scheduled migration, compare, or scrubbing job.
- **Type** shows the job type, either **Offline**, **Migration**, **Compare**, or **Scrubbing**.
- **Status** shows the job state, either **Running**, **Paused**, **Stopped**, or **Failed**.
- **% Completed** shows the percent of the job that is finished.
- **Start Time** indicates the date and time that the job began.
- **End Time** indicates the date and time that the job finished.
- **Source Array - LUN** indicates the name of the source array and LUN from which data is currently being migrated to the destination LUN.
- **Dest Array - LUN** indicates the name of the destination array and LUN to which data is currently being migrated from the source LUN.

Synchronizing Jobs

The data migration job synchronization feature is available only for *online* data migration. SANsurfer Router Manager for the iSR6152 currently supports only *offline* data migration. Therefore the Synchronizing Jobs page will not contain any information, as shown in Figure 4-3.

Figure 4-3. Data Migration Jobs: Synchronizing Jobs Page

Completed Data Migration Jobs

The Completed Data Migration Jobs page provides data for finished data migration jobs, as shown in Figure 4-4.

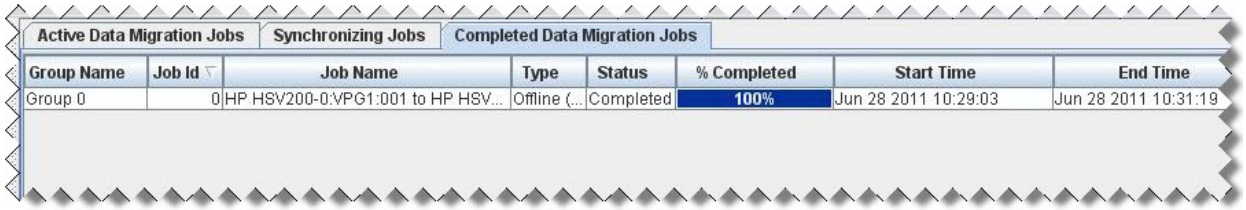


Figure 4-4. Data Migration Jobs: Completed Data Migration Jobs Page

The Completed Data Migration Jobs page contains the following information:

- **Group Name** shows the migration group name for which the migration, compare, or scrubbing job was scheduled.
- **Job ID** identifies by number the completed migration, compare, or scrubbing job.
- **Job Name** identifies by name the completed migration, compare, or scrubbing job.
- **Type** shows the job type, either **Offline**, **Migration**, **Compare**, or **Scrubbing**.
- **Status** shows the job state, **Completed**.
- **% Completed** shows the job as 100% percent finished.
- **Start Time** indicates the date and time that the job began.
- **End Time** indicates the date and time that the job finished.

- **Source Array - LUN** indicates the name of the source array and LUN from which data was migrated to the destination LUN.
- **Dest Array - LUN** indicates the name of the destination array and LUN to which data was migrated from the source LUN.

A Simple Network Management Protocol (SNMP)

Introduction

Simple network management protocol (SNMP) provides monitoring and trap functions for managing the router through third-party applications that support SNMP. The router firmware supports SNMP versions 1 and 2 and a QLogic management information base (MIB) (see page A-2). You may format the traps using SNMP version 1 or 2 (see page A-11).

SNMP Properties

You can set the SNMP properties using SANsurfer Router Manager (see "SNMP Management" on page 3-10). Table A-1 describes the SNMP properties.

Table A-1. SNMP Properties

Parameter	Description
Read community	A password that authorizes an SNMP management server to read information from the router. This is a write-only field. The value on the router and the SNMP management server must be the same. The read community password can be up to 32 characters *excluding* the number sign (#), semicolon (;), and comma (,). The default is password is *public*.
Trap community	A password that authorizes an SNMP management server to receive traps. This is a write-only field. The value on the router and the SNMP management server must be the same. The trap community password can be up to 32 characters *excluding* the number sign (#), semicolon (;), and comma (,). The default password is *public*.
System location	Specifies the name of the router location. The name can be up to 64 characters *excluding* the number sign (#), semicolon (;), and comma (,). The default is undefined.

Table A-1. SNMP Properties (Continued)

Parameter	Description
System contact	Specifies the name of the person to be contacted to respond to trap events. The name can be up to 64 characters *excluding* the number sign (#), semicolon (;), and comma (,). The default is undefined.
Authentication traps	Enables or disables authentication trap generation in response to authentication failures. The default is disabled.

SNMP Trap Configuration

SNMP trap configuration supports setting up to eight trap destinations. Choose from Traps 1 through 8 to configure each trap. Table A-2 describes the parameters for configuring an SNMP trap.

Table A-2. SNMP Trap Configuration Parameters

Parameter	Description
Trap *n* enabled	Enables or disables trap *n*. If disabled, the trap is not configured.
Trap address[a]	Specifies the IP to which the SNMP traps are sent. A maximum of eight trap addresses is supported. The default for traps is 0.0.0.0.
Trap port[a]	The port number on which the trap is sent. The default is 162.
Trap version	Specifies the SNMP version (1 or 2) with which to format traps.

[a] Traps (other than 0.0.0.0) and trap port combinations must be unique. For example, if trap 1 and trap 2 have the same address they must have different port values. Similarly, if trap 1 and trap 2 have the same port value, they must have different addresses.

Management Information Base (MIB)

The following sections describe the QLogic management information base (MIB). The MIB consists of four object groups:

- “System Information” on page A-3
- “Network Port Table” on page A-4
- “Fibre Channel Port Table” on page A-6
- “Sensor Table” on page A-8

System Information

The system information objects provide the system serial number, version numbers (hardware, software, and agent), and number of ports (Fibre Channel and GbE).

qsrSerialNumber

Syntax	SnmpAdminString
Access	Read only
Description	The system serial number.

qsrHwVersion

Syntax	SnmpAdminString
Access	Read only
Description	The system hardware version number.

qsrSwVersion

Syntax	SnmpAdminString
Access	Read only
Description	The system software (firmware) version number.

qsrNoOfFcPorts

Syntax	Unsigned32
Access	Read only
Description	The number of Fibre Channel ports on the system.

qsrNoOfGbEPorts

Syntax	Unsigned32
Access	Read-only
Description	The number of gigabit Ethernet ports on the system.

qsrAgentVersion

Syntax	SnmpAdminString
Access	Read only
Description	The version number of the agent software on the system.

Network Port Table

The network port table contains a list of network ports that are operational on the router. The entries in this table include the management port, the iSCSI ports, and the TOE ports on the router. A single gigabit Ethernet port can function as an iSCSI port and a TOE simultaneously; therefore, there may be up to two entries for a given gigabit Ethernet port.

qsrNwPortTable

Syntax	**Sequence of** QsrNwPortEntry
Access	Not accessible
Description	The entries in this table include the management port, iSCSI port, and TOE port on the router.

qsrNwPortEntry

Syntax	QsrNwPortEntry
Access	Not accessible
Description	Each entry (row) contains information about a specific network port.

QsrNwPortEntry

A network port entry consists of the following sequence of objects:

qsrNwPortRole	QsrPortRole
qsrNwPortIndex	unsigned32
qsrNwPortAddressMode	INTEGER
qsrIPAddressType	InetAddressType
qsrIPAddress	InetAddress
qsrNetMask	InetAddress
qsrGateway	InetAddress
qsrMacAddress	MacAddress
qsrNwLinkStatus	QsrLinkStatus
qsrNwLinkRate	QsrLinkRate

qsrNwPortRole

Syntax	QsrPortRole
Access	Not accessible
Description	The operational role of this port: management port, iSCSI port, or TOE.

qsrNwPortIndex

Syntax	Unsigned32
Access	Not accessible
Description	A positive integer indexing each network port in a given role.

qsrNwPortAddressMode

Syntax	INTEGER 1 = Static 2 = DHCP 3 = Bootp 4 = RARP
Access	Read only
Description	The method by which the port gets its IP address.

qsrIPAddressType

Syntax	InetAddressType
Access	Read only
Description	The IP type: IPv4 or IPv6.

qsrIPAddress

Syntax	InetAddress
Access	Read only
Description	The IP of the port.

qsrNetMask

Syntax	InetAddress
Access	Read only
Description	The subnet mask for this port.

qsrGateway

Syntax	InetAddress
Access	Read only
Description	The gateway for this port.

qsrMacAddress

Syntax	IMacAddress
Access	Read only
Description	The MAC for this port.

qstNwLinkStatus

Syntax	QsrLinkStatus
Access	Read only
Description	The operational link status for this port.

qsrNwLinkRate

Syntax	QsrLinkRate
Access	Read only
Description	The operational link rate for this port.

Fibre Channel Port Table

This table contains a list of the Fibre Channel ports on the router. There are as many entries in this table as there are Fibre Channel ports on the router.

qsrFcPortTable

Syntax	Sequence of QsrFcPortEntry
Access	Not accessible
Description	A list of the Fibre Channel ports on the router. There are as many entries in this table as there are Fibre Channel ports on the router.

qsrFcPortEntry

Syntax	QsrFcPortEntry
Access	Not accessible
Description	Each entry (row) contains information about a specific Fibre Channel port.

QsrFcPortEntry

A Fibre Channel port entry consists of the following sequence of objects:

qsrFcPortRole	QsrPortRole
qsrFcPortIndex	Unsigned32
qsrFcPortNodeWwn	PhysAddress
qsrFcPortWwn	PhysAddress
qsrFcPortId	PhysAddress
qsrFcPortType	Unsigned32
qsrFcLinkStatus	QsrLinkStatus
qsrFcLinkRate	QsrLinkRate

qsrFcPortRole

Syntax	QsrPortRole
Access	Not accessible
Description	The operational role of this port: FCP mode or frame shuttle mode.

qsrFcPortIndex

Syntax	Unsigned32
Access	Not accessible
Description	A positive integer indexing each Fibre Channel port in a given role.

qsrFcPortNodeWwn

Syntax	PhysAddress
Access	Read only
Description	The world wide name of the node that contains this port.

qsrFcPortWwn

Syntax	PhysAddress
Access	Read only
Description	The world wide name for this port.

qsrFcPortId

Syntax	PhysAddress
Access	Read only
Description	The interface's 24-bit Fibre Channel identifier.

qsrFcPortType

Syntax	Unsigned32
Access	Read only
Description	The type of Fibre Channel port, as indicated by the use of the appropriate value assigned by the Internet Assigned Numbers Authority (IANA). The IANA-maintained registry for Fibre Channel port types can be found at: www.iana.org/assignments/fc-port-types

qsrFcLinkStatus

Syntax	QsrLinkStatus
Access	Read only
Description	The current link status for this port.

qsrFcLinkRate

Syntax	QsrLinkRate
Access	Read only
Description	The current link rate for this port.

Sensor Table

This table contains a list of all the sensors on the router. There are as many entries (rows) in this table as there are sensors.

qsrSensorTable

Syntax	**Sequence of** QsrSensorEntry
Access	Not accessible
Description	A list of all the sensors on the router. There are as many entries (rows) in this table as there are sensors.

qsrSensorEntry

Syntax	QsrSensorEntry

Access Not accessible
Description Each entry (row) corresponds to a single sensor.

QsrSensorEntry

A sensor entry consists of the following sequence of objects:

qsrSensorType	INTEGER
qsrSensorIndex	Unsigned32
qsrSensorUnits	INTEGER
qsrSensorValue	Integer32
qsrUpperThreshold	Integer32
qsrLowerThreshold	Integer32
qsrSensorState	INTEGER

qsrSensorType

Syntax INTEGER
Temperature = 1
Access Not accessible
Description The type of data being measured by this sensor.

qsrSensorIndex

Syntax Unsigned32
Access Not accessible
Description A positive integer identifying each sensor of a given type.

qsrSensorUnits

Syntax INTEGER
Celsius = 1
Access Read only
Description The unit of measurement for the sensor.

qsrSensorValue

Syntax Integer32

Access Read only

Description The current value of the sensor.

qsrUpperThreshold

Syntax Integer32

Access Read only

Description The upper-level threshold for this sensor.

qsrLowerThreshold

Syntax Integer32

Access Read only

Description The lower-level threshold for this sensor.

qsrSensorState

Syntax INTEGER

Access Read only

Description The state of this sensor, indicating the health of the system.

- **Unknown—**The sensor value and thresholds cannot be determined.
- **Normal—**The sensor value is within normal operational limits.
- **Warning—**The sensor value is approaching a threshold.
- **Critical—**The sensor value has crossed a threshold.

Notifications

The router provides the following notification types:

- “Notification Objects” on page A-11
- “Agent Start Up Notification” on page A-12
- “Agent Shut Down Notification” on page A-12
- “Network Port Down Notification” on page A-12
- “Fibre Channel Port Down Notification” on page A-12
- “Sensor Notification” on page A-12
- “Generic Notification” on page A-13

The following sections describe these notifications and objects their use.

Notification Objects

This section defines the objects used in notifications.

qsrEventSeverity

Syntax	INTEGER
Access	Accessible for notify
Description	This notification indicates the severity of the event. The value *clear* specifies that a condition that caused an earlier trap is no longer present.

qsrEventDescription

Syntax	SnmpAdminString
Access	Accessible for notify
Description	A textual description of the event that occurred.

qsrEventTimeStamp

Syntax	DateAndTime
Access	Accessible for notify
Description	This notification indicates when the event occurred.

Agent Start Up Notification

The agent startup notification indicates that the agent on the router has started running.

qsrAgentStartup uses the following object:

- qsrEventTimeStamp

Agent Shut Down Notification

The agent shut down notification indicates that the agent on the router is shutting down.

qsrAgentShutdown uses the following object:

- qsrEventTimeStamp

Network Port Down Notification

The network port down notification indicates that the specified network port is *down*. The next time the port comes up, this event is sent with the *qsrEventSeverity* object set to *clear*.

qsrNwPortDown uses the following objects:

- qsrNwLinkStatus
- qsrEventTimeStamp
- qsrEventSeverity

Fibre Channel Port Down Notification

The Fibre Channel port down notification indicates that the specified Fibre Channel port is *down*. The next time the port comes up, this event is sent with the *qsrEventSeverity* object set to *clear*.

qsrFcPortDown uses the following objects:

- qsrFcLinkStatus
- qsrEventTimeStamp
- qsrEventSeverity

Sensor Notification

The sensor notification indicates that the state for the specified sensor is not *normal*. When the sensor returns to the normal state, this event is sent with the *qsrEventSeverity* object set to *clear*.

qsrSensorNotification uses the following objects:

- qsrSensorValue
- qsrSensorState

- qsrEventTimeStamp
- qsrEventSeverity

Generic Notification

The generic notification reports events other than the defined event types. It provides a description object that identifies the event in clear text.

qsrGenericEvent uses the following objects:

- qsrEventTimeStamp
- qsrEventSeverity
- qsrEventDescription

B Log Messages

This appendix provides details about messages logged to a file. The message log is persistent because it is maintained across router power cycles and reboots.

Information in Table B-1 is organized as follows:

- The **ID** column specifies the message identification numbers in ascending order.
- The **Log Message** column indicates the message text shown in the CLI or SANsurfer Router Manager router log. Note that:
  - Log messages for the iSCSI driver module are common to both iSCSI ports. Log messages beginning with `#0` denote iSCSI port 1 (GE1) and log messages beginning with `#1` denote iSCSI port 2 (GE2).
  - Log messages for the Fibre Channel driver module are common to both Fibre Channel ports. Log messages beginning with `#0` denote Fibre Channel port 1 (FC1), and log messages beginning with `#1` denote Fibre Channel port 2 (FC2).
  - Log messages for the FCIP module are common to both FCIP routes. Log messages beginning with `#0` denote FCIP route 1, and log messages beginning with `#1` denote FCIP route 2.
- The **Module Type** column specifies the message reporting module, where:
  - **App** = Application module
  - **FC** = Fibre Channel driver
  - **FCIP** = FCIP driver
  - **iSCSI** = iSCSI driver

- **NIC** = FCIP NIC module
- **System** = System module
- **User** = User module

- The **Msg. Type** column specifies the log message type, where:
  - **Error** = Error log message
  - **Fatal** = Fatal log message
  - **Info** = Informational log message

- The **Description** column provides additional information about the log message.

Table B-1. iSR6152 Router Log Messages

ID	Log Message	Module Type	Msg. Type	Description
40967	`QLBA_NullDoorbell: driver unloaded, port disabled`	App	Error	NULL doorbell routine for unloaded drivers. When a driver is unloaded, the doorbell routine is redirected to this NULL routine.
40996	`QLBA_ProcessTrb: Processing unsupported ordered tag command`	App	Error	Processing unsupported ordered tag task management command.
41004	`QLBA_ProcessTrb: Processing unsupported head of queue tag command`	App	Error	Processing unsupported head-of-queue task management command.
41058	`QLBA_CreateTargetDeviceObject: Too many devices`	App	Error	Unable to create an object for the target device; exceeded the maximum number of target devices.
41060	`QLBA_CreateTargetNodeObject: Too many devices`	App	Error	Unable to create an object for the target node; exceeded the maximum number of target devices.
41067	`QLBA_CreateLunObject: LunObject memory unavailable`	App	Error	Memory unavailable for LUN object.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
41077	`QLBA_CreateInitiatorObject: Too many initiators`	App	Error	Unable to create an object for initiator object; exceeded the maximum number of initiators.
41096	`QLBA_DisplayTargetOperationStatus: PCI Error, Status 0x%.2x`	App	Error	Process control block status indicates that a PCI error occurred during a target operation.
41106	`QLBA_DisplayInitiatorOperationStatus: DMA Error, Status 0x%.2x`	App	Error	Process control block status indicates that a direct memory access (DMA) error occurred during an initiator operation.
41107	`QLBA_DisplayInitiatorOperationStatus: Transport Error, Status 0x%.2x`	App	Error	Process control block status indicates that a transport error (protocol) occurred during an initiator operation.
41111	`QLBA_DisplayInitiatorOperationStatus: Data Overrun, Status 0x%.2x`	App	Error	Process control block status indicates that a data overrun error occurred during an initiator operation.
41234	`QLIS_LoginPduContinue: Operation failed. Initiator 0x%x, TPB status 0x%x`	App	Error	iSCSI login failed between receipt of protocol data unit (PDU) and request for the data segment.
41238	`QLKV_ValidateLoginTransitCsgNsgVersion failed (status 0x%x)`	App	Error	iSCSI login failed due to unsupported version number in received Login PDU.
41257	`QLIS_LoginPduContinue: Invalid initiator name. Initiator:`	App	Error	iSCSI Login PDU contains invalid initiator name. The format and character set used to form the initiator name is invalid.
41265	`QLIS_LoginPduContinue: Target not configured for Portal`	App	Error	iSCSI target login was attempted to a portal (iSCSI1 or iSCSI2) on which the target is not presented.
41267	`QLIS_LoginPduContinue: Target not found. Target name:`	App	Error	iSCSI Login PDU received for a target with a target name unknown to the router.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
41268	`QLIS_LoginPduContinue: Missing target name`	App	Error	iSCSI Login PDU received without a target name for a normal session.
41270	`QLIS_LoginPduContinue: TSIH is 0 but InitiatorName key/value not provided`	App	Error	iSCSI Login PDU received without an initiator name key/value.
41272	`QLIS_LoginPduContinue: CONN_STATE_IN_LOGIN, Unknown InitTaskTag`	App	Error	iSCSI Login PDU received with an incorrect initiator task tag for a session that is partially logged in. This error would occur if a login PDU other than the initial login PDU used an initiator task tag that was different from the initiator task tag provided in the initial login PDU.
41283	`QLIS_LoginPduContinue: TSIH 0x%x out of range`	App	Error	iSCSI login PDU was received with a target session identifying handle (TSIH) out of range. This error would occur if the iSCSI initiator attempting the login failed to used the TSIH value provided in the Target Login Response PDU (router is target) in subsequent login PDUs.
41284	`QLIS_LoginPduContinue: Session does not exist, invalid TSIH 0x%x`	App	Error	iSCSI Login PDU was received with an invalid TSIH value. The TSIH is invalid because there is no session with that TSIH value. This error would occur if the iSCSI initiator attempting the login failed to used the TSIH value provided in the target login response PDU (router is target) in subsequent login PDUs.
41353	`QLIS_LoginPduContinue: Session does not exist, invalid TSIH 0x%x`	App	Error	iSCSI Login rejected due to a CHAP authentication error.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
41354	`QLIS_LoginPduContinue: Unexpected CHAP key detected`	App	Error	iSCSI Login rejected due to a CHAP key error.
41508	`QLBI_SetPortInfo: QLUT_AllocatePortalObject failed (PortType 0x%x, PortId 0x%x)`	App	Error	Failed to allocate an object for *Set Port Info* input/output control (IOCTL) processing: PortType: 0 = Fibre Channel, 1 = iSCSI PortID: 0 = FC1 or iSCSI1(GE1), 1 = FC2 or iSCSI2 (GE2)
41626	`QLBI_GetLunInfo: INQUIRY failed, TPB status 0x%x`	App	Error	Inquiry command failed. The Inquiry command was issued by the router as part of its discovery process.
41629	`QLBI_GetLunInfo: INQUIRY failed, TPB status 0x%x`	App	Error	Pass-Through command for Inquiry command for page 83 failed. The Inquiry command was issued by the router as part of its discovery process.
41635	`QLBI_Passthru: Invalid data length %d bytes`	App	Error	Pass-Through command for Read Capacity command failed. The Read Capacity command was issued by the router as part of its discovery process.
41636	`QLBI_GetLunInfo: INQUIRY failed, TPB status 0x%x`	App	Error	Read Capacity command failed. The Read Capacity command was issued by the router as part of its discovery process.
41696	`QLBI_GetLunInfo: INQUIRY failed, TPB status 0x%x`	App	Error	Pass-Through command issued by management tool (such as GUI) was aborted.
41700	`QLBI_Passthru: Invalid CDB length %d bytes`	App	Error	Pass-Through command issued by management tool (such as GUI) failed due to invalid command descriptor block (CDB) length.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
41701	`QLBI_Passthru: Invalid data length %d bytes`	App	Error	Pass-Through command issued by management tool (such as GUI) failed due to invalid data length.
41717	`QLBI_Passthru: Invalid data length %d bytes`	App	Error	Pass-Through command issued by management tool (such as GUI) was interrupted or timed out.
41750	`QLBI_Ioctl: ERROR: Operation (0x%x) not supported in this mode`	App	Error	IOCTL operation unsupported. Operation code provided in log message.
41768	`QLBI_GetLunList: REPORT LUNS command failed`	App	Error	Report LUNs command failed. The Report LUNs command was issued by the router as part of its discovery process.
41769	`QLBI_GetLunList: REPORT LUNS command failed with CHECK CONDITION, SCSI STATUS 0x%02X`	App	Error	Report LUNs command failed with check condition status. The Report LUNs command was issued by the router as part of its discovery process.
41771	`QLBI_GetLunList: Lun allocation failed for LunId %d`	App	Error	Failed to allocate LUN object; out of resources.
41994	`QLFC_Login: VpIndex (%d) out of range`	App	Error	Login attempted using Fibre Channel virtual port (VP) index that is out-of-range (range = 0–31). Index reported in log message.
41995	`QLFC_Login: VP Index 0x%x not configured`	App	Error	Login attempted using Fibre Channel VP index that has not been configured. Operation attempted on an unconfigured VP.
42002	`QLFC_Login: Can't open connection`	App	Error	Attempting login but Fibre Channel connection cannot be opened.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
42024	`QLFC_Logout: No active path to device. WWPN: %.2X%.2X%.2X%.2X%.2X%.2X%.2X%.2X%.2X`	App	Error	Attempting logout of device for which there is no active path (WWPN not found).
42027	`QLFC_Logout: VP Index 0x%x not configured`	App	Error	Logout attempted using Fibre Channel VP index that has not been configured. Operation attempted on an unconfigured VP.
42068	`QLFC_HandleTeb: System Error`	App	Error	Event notification; Fibre Channel processor encountered a system error (unrecoverable firmware error).
42069	`QLFC_HandleTeb: Driver Fatal Error`	App	Error	Event notification; Fibre Channel driver encountered a fatal error.
42072	`QLFC_HandleTeb: Driver Fatal Error`	App	Error	Event notification; Fibre Channel port logged out.
42242	`QLIS_AllocateSessionObject: Out of session resources`	App	Error	Failed to allocate object for iSCSI session; out of session resources.
42252	`QLIS_EnqueueiScsiPdu: Duplicate PDU, CmdSN %d (0x%x), dropping it`	App	Error	Received iSCSI PDU with duplicate command sequence number (CmdSN). Command PDU will be dropped.
42258	`QLIS_InstantiateSession: Can't add Initiator to the database`	App	Error	Unable to allocate iSCSI initiator object while instantiating session.
42259	`QLIS_InstantiateSession: Maximum number (%d) of allowed hosts already logged in`	App	Error	iSCSI session login rejected because the maximum number of allowed hosts are already logged in.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
42404	`QLIS_InstantiateSession: Maximum number (%d) of allowed hosts already logged in`	App	Error	Failed to execute iSCSI Command PDU because its CmdSN is out-of-range. Log message contains the incorrect CmdSN, the valid CmdSN range, the first byte of the CDB, and the data length.
42648	`QLIS_HandleTeb: Driver Fatal Error`	App	Error	Event notification; iSCSI driver encountered a fatal error.
42649	`QLIS_HandleTeb: Unload Driver`	App	Error	Event notification; an IOCTL request was received to unload the iSCSI driver.
42654	`QLIS_HandleTeb: iSNS Connection Failed`	App	Error	Event notification; attempt to connect to the iSCSI name server (iSNS) failed.
43265	`QLUT_AllocateTpbExtension: TPB allocation failed`	App	Error	Failed to allocate memory for TPB extension.
43267	`QLUT_AllocateTpbExtension: Alloc of DSD failed for buffer len %d`	App	Error	Failed to allocate data segment descriptor (DSD) (buffer length %d).
43268	`QLUT_AllocateTpbExtension: Data buffer allocation failed (length %d)`	App	Error	Failed to allocate data buffer (length %d).
44549	`QLDM_HandleMigError: Migration Job %d stopped for Src Lun %hd Dest Lun %hd Error %x AdditionalErrorStatus %x at line %d`	App	Error	An error occurred on an I/O that was issued for a migration job. The message provides the job ID, source, and destination LUN IDs, as well as the error.
53254	`System Booting Up.`	App	Info	Router is booting up.
53357	`QLBA_ProcessTpb: De-compression failed. Disabling compression temporarily`	App	Info	Decompression failed. Disabling compression temporarily.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
53584	`QLIS_LoginPduContinue: [0x%x] SES_STATE_LOGGED_IN NORMAL`	App	Info	iSCSI session full feature login.
53585	`QLIS_LoginPduContinue: [0x%x] SES_STATE_LOGGED_IN DISCOVERY`	App	Info	iSCSI session discovery login.
53586	`QLIS_LoginPduContinue: Initiator: %s`	App	Info	iSCSI login of initiator: %s.
53587	`QLIS_LoginPduContinue: Target: %s`	App	Info	iSCSI login of target: %s.
54274	`QLFC_Login: Origin 0x%x, VP Index 0x%x, Id 0x%x`	App	Info	Fibre Channel login occurred, origin *xx* (1 = adapter, 2 = target, 3 = initiator), VP (virtual port) *xx*, ID (loop ID) *xx*.
54275	`QLFC_Login: Port ID  %.2x%.2x%.2x`	App	Info	Fibre Channel login occurred with port ID *xx.xx.xx*.
54276	`QLFC_Login: Node Name %.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x`	App	Info	Fibre Channel login occurred with WWNN *xx.xx.xx.xx.xx.xx.xx.xx*.
54277	`QLFC_Login: Port Name %.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x`	App	Info	Fibre Channel login occurred with WWPN *xx.xx.xx.xx.xx.xx.xx.xx*.
54306	`QLFC_Logout: Origin 0x%x, VP Index 0x%x, Id 0x%x`	App	Info	Fibre Channel logout occurred: Origin 0x%x, VP Index 0x%x, Id 0x%x.
54307	`QLFC_Logout: Port ID  %.2x%.2x%.2x`	App	Info	Fibre Channel logout occurred: Port ID %.2x%.2x%.2x.
54308	`QLFC_Logout: Node Name %.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x`	App	Info	Fibre Channel logout occurred: Node Name *xx xx xx xx xx xx xx xx*.
54309	`QLFC_Logout: Port Name %.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x`	App	Info	Fibre Channel logout occurred: Port Name *xx xx xx xx xx xx xx xx*.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
54359	`QLFC_Logout: Port Name %.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x`	App	Info	Fibre Channel login event notification, VP (virtual port) *xx*.
54683	`QLIS_OpenConnectionNotification: Target connection opened (Port %d, DDB %d)`	App	Info	iSCSI target connection opened for port %d, data description block (DDB) %d.
54938	`QLIS_OpenConnectionNotification: Target connection opened (Port %d, DDB %d)`	App	Info	Event notification; iSCSI open connection request.
54939	`QLIS_HandleTeb: UTM_EC_CLOSE_CONNECTION or UTM_EC_CONNECTION_CLOSED`	App	Info	Event notification; iSCSI close connection request or connection closed.
54940	`QLIS_HandleTeb: UTM_EC_CLOSE_CONNECTION or UTM_EC_CONNECTION_CLOSED`	App	Info	Event notification; iSCSI connection closed.
54941	`QLIS_HandleTeb:iSNS Server Open Connection succeeded`	App	Info	Event notification; connection opened with iSNS server.
54943	`QLIS_HandleTeb: UTM_EC_ISNS_SCN`	App	Info	Event notification; iSNS registered state change notification (RSCN) received.
54945	`QLIS_HandleTeb: UTM_EC_ISNS_CLIENT_DISCOVERED`	App	Info	Event notification; iSNS client discovered.
56321	`QLMP_Logout: Virtual Target Logged out`	App	Info	An array went offline because all the target ports of the array went offline.
56322	`QLMP_Logout: Node Name %.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x`	App	Info	WWNN of the array that went offline. This is tied with ID 56321.
56323	`QLMP_Logout: Port Name %.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x`	App	Info	WWPN of the array that went offline. This is tied with ID 56321.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
56346	`QLMP_CombineMPDevice: Virtual Target Online`	App	Info	An array came online.
56347	`QLMP_CombineMPDevice: Node Name %.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x`	App	Info	WWNN of the array that came online. This is tied with ID 56346.
56348	`QLMP_CombineMPDevice: Port Name %.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x`	App	Info	WWPN of the array that came online. This is tied with ID 56346.
56842	`QLDM_ResumeMigration: Failed to resume job: %d, job's current state: 0x%x, error: %d`	App	Info	Failed to resume a paused job.
56865	`QLDM_DelayedStart:%d Failed to start job : Job ID: %d`	App	Info	Failed to start a delayed schedule job.
56866	`Lun is already used for of some other migration job`	App	Info	Migration add failed because LUN is part of another migration job.
56867	`Selected Lun is a Controller Lun`	App	Info	Migration being added with a LUN that is a controller LUN. Data LUNs are required for configuring migration jobs.
56868	`Selected Lun is Masked, It cant be used for Offline Migration`	App	Info	Migration job being added for a LUN that is masked to an initiator on the router. Mapped LUNs cannot be used for offline migration jobs.
56869	`Read Capacity is not available for the Lun`	App	Info	Migration job being added for a LUN for which no read capacity information is available. Migration add will fail.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
56870	`QLDM_CreateMigrationObject: Failed to create Source Lun Object`	App	Info	Failed to allocate memory for the source LUN of a migration job.
56871	`QLDM_CreateMigrationObject: Failed to create Destination Lun Object`	App	Info	Failed to allocate memory for the destination LUN of a migration job.
56872	`QLDM_CreateMigrationObject: MigrationObject memory unavailable`	App	Info	Failed to allocate memory for the migration job.
56880	`Start time got from user %lu Cur Time: %lu Diff: %d`	App	Info	The log shows the configured start time and current time for a delayed migration job.
56881	`Failed to stop migration job id %u`	App	Info	Failed to stop a migration job; the error message includes the job ID.
56884	`QLDM_DeleteMigrationJobByLun: Could not find migration object`	App	Info	Did not find a migration job for the associated LUN object.
69652	`#%d: qlutm_init: Diagnostic failed, invalid SRAM`	iSCSI	Fatal	iSCSI processor SRAM test failed.
69653	`#%d: qlutm_init: Diagnostic failed, fail reboot`	iSCSI	Fatal	iSCSI processor failed diagnostic reboot.
69654	`#%d: qlutm_init: Diagnostic failed, invalid NVRAM`	iSCSI	Fatal	iSCSI processor failed NVRAM diagnostic.
69655	`#%d: qlutm_init: Diagnostic failed, invalid DRAM`	iSCSI	Fatal	iSCSI processor failed DRAM diagnostic.
69656	`#%d: qlutm_init: Failed to return diagnostic result to Bridge`	iSCSI	Fatal	iSCSI processor failed to return diagnostic results.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
69941	`#%d: QLUtmProcessResponseQueue: Invalid handle %x EntryType %x`	iSCSI	Fatal	Response queue entry contains an invalid handle.
69951	`#%d: QLSetNvram: QLRebootTimer failed AF %x RS %x Time %d`	iSCSI	Fatal	Set NVRAM reboot timer failed.
69964	`#%d: QLDisable: QLRebootTimer failed AF %x RS %x Time %d`	iSCSI	Fatal	Port disable reboot timer failed.
69966	`#%d: QLEnable: QLRebootTimer failed AF %x RS %x Time %d`	iSCSI	Fatal	Port enable reboot timer failed.
70224	`#%d: QLProcSrblessiSNSResponse: Invalid handle %x`	iSCSI	Fatal	iSNS response contains an invalid handle.
70400	`#%d: QLInitializeDevice: QLStartAdapter failed`	iSCSI	Fatal	Start iSCSI processor failed.
70417	`#%d: QLInitializeAdapter: QLInitializeFW failed`	iSCSI	Fatal	iSCSI processor firmware initialization failed.
70432	`#%d: QLDoInterruptServiceRoutine: PortFatal interrupt. PortFatalErrorStatus %08x CSR %08x AS %x AF %x`	iSCSI	Fatal	iSCSI processor port fatal error.
70448	`#%d: QLStartAdapter: QLRebootTimer failed AF %x RS %x Time %d`	iSCSI	Fatal	Start iSCSI processor reboot timer failed.
70489	`#%d: QLIsrDecodeMailbox: System Error 8002 MB[1-7] %04x %04x %04x %04x %04x %04x %04x`	iSCSI	Fatal	iSCSI processor fatal system error.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
70499	`#%d: QLProcessResponseQueue: Invalid handle for ET_PASSTHROUGH_STATUS`	iSCSI	Fatal	Response queue invalid handle for ET pass-through.
70501	`#%d: QLProcessResponseQueue: Invalid entry type in response queue %x`	iSCSI	Fatal	Response queue invalid entry type.
70502	`#%d: QLProcessResponseQueue: Invalid handle %x EntryType %x`	iSCSI	Fatal	Response queue invalid handle for specified entry type.
70524	`#%d: QLProcessAen: Invalid event %x`	iSCSI	Fatal	Asynchronous event for unknown event type.
70544	`#%d: QLRebootTimer: Reboot failed!`	iSCSI	Fatal	Reboot timer failed.
70563	`#%d: QLRebootTimer: Reboot failed!`	iSCSI	Fatal	iSCSI driver missed iSCSI processor heartbeat. iSCSI processor rebooted.
70564	`#%d: QLRebootTimer: Reboot failed!`	iSCSI	Fatal	iSCSI processor failed to complete operation before timeout.
70609	`#%d: QLRebootTimer: Reboot failed!`	iSCSI	Fatal	iSCSI processor system error restart.
70610	`#%d: QLProcessSystemError: RebootHba failed`	iSCSI	Fatal	iSCSI processor reboot failed.
70784	`#%d: QLConfigChip: invalid NVRAM`	iSCSI	Fatal	iSCSI processor NVRAM invalid (checksum error).
70835	`#%d: QLStartFw: MBOX_CMD_SET_FLASH failed %x`	iSCSI	Fatal	iSCSI controller Set Flash command failed.
70836	`#%d: QLStartFw: Invalid Fw loader state 0x%x`	iSCSI	Fatal	iSCSI controller failed to load firmware.
70837	`#%d: QLStartFw: Load Fw loader timeout`	iSCSI	Fatal	iSCSI controller firmware load operation timed out.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
70938	`#%d: ql_adapter_up: Failed to initialize adapter`	iSCSI	Fatal	iSCSI controller failed to initialize.
72351	`#%d: QLProcSrblessiSNSResponse: Invalid handle %x`	iSCSI	Fatal	iSCSI controller reported that an SNS response had an invalid handle.
73990	`#%d: QLUtmIoctlEnable: Initialize FW failed`	iSCSI	Error	iSCSI processor failed firmware initialization.
74056	`#%d: QLRunDiag: MBOX Diag test internal loopback failed %x %x`	iSCSI	Error	iSCSI processor failed the internal loopback test.
74057	`#%d: QLRunDiag: MBOX Diag test external loopback failed %x %x`	iSCSI	Error	iSCSI processor failed the external loopback test.
74068	`#%d: QLUtmReceiveScsiCmd: Invalid ATIO Continuation type %x`	iSCSI	Error	iSCSI processor reported an invalid Accept Target I/O (ATIO) Continuation type *x*.
74069	`#%d: QLUtmProcessResponseQueue: Immediate data addr %08x:%08x in unsupported PduType`	iSCSI	Error	iSCSI processor reported that an immediate data address (*xxxxxxxx:xxxxxxxx*) in an unsupported PDU type.
74241	`#%d: QLiSNSEnableCallback: iSNS Server TCP Connect failed`	iSCSI	Error	iSCSI processor could not connect with the iSNS.
74577	`#%d: QLIsrDecodeMailbox: NVRAM invalid`	iSCSI	Error	iSCSI processor reported that the iSCSI port NVRAM contains invalid data (checksum error).
74580	`#%d: QLIsrDecodeMailbox: AEN %04x, Duplicate IP address detected, MB[1-5] %04x %04x %04x %04x %04x`	iSCSI	Error	iSCSI processor reported a duplicate IP address was detected (address *xxxx xxxx xxxx xxxx xxxx*).

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
74587	`#%d: QLIsrDecodeMailbox: Link down`	iSCSI	Error	iSCSI processor reported a link down condition.
74656	`#%d: QLReadyTimer: Adapter missed heartbeat for %d seconds. Time left %d`	iSCSI	Error	Driver failed to receive a heartbeat from the iSCSI processor for the specified number of seconds.
74659	`#%d: QLReadyTimer: Adapter missed heartbeat for 0x%x seconds`	iSCSI	Error	iSCSI processor (adapter) failed to provide a heartbeat for *x* seconds.
74660	`#%d: QLReadyTimer: Abort pTpb=%p failed, DrvCount 0x%x`	iSCSI	Error	iSCSI processor failed to complete an abort request.
74661	`#%d: QLTimer: Abort pTpb=%p, Type %x, Timeout 0x%x DrvCount 0x%x, DdbIndex 0x%x`	iSCSI	Error	Driver timed out an iSCSI processor operation and is aborting the operation.
74663	`#%d: QLReadyTimer: MBOX_CMD %04x %04x %04x %04x %04x %04x %04x %04x timed out`	iSCSI	Error	Driver timed out an iSCSI processor mailbox command.
74665	`#%d: QLReadyTimer: QLiSNSReenable failed.`	iSCSI	Error	Driver timed out while attempting to reconnect with the iSNS.
74705	`#%d: QLProcessSystemError: Restart RISC`	iSCSI	Error	iSCSI processor was restarted.
74746	`#%d: QLInitializeFW: MBOX_CMD_INITIALIZE_FIRMWARE failed %04x %04x %04x %04x %04x %04x`	iSCSI	Error	iSCSI processor rejected the firmware initialize command.
74784	`#%d: QLUpdateInitiatorData: No more room in Initiator Database.`	iSCSI	Error	Driver's initiator database is full. The driver is capable of storing 1024 iSCSI initiators in its database. Use the CLI or GUI to remove unwanted/unused iSCSI initiators.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
74800	`#%d: QLSetTargetData: No more room in Target Database.`	iSCSI	Error	Driver's target database is full. Use the CLI or GUI to remove unwanted/unused iSCSI targets.
75008	`#%d: ql_process_error: OB_TCP_IOCB_RSP_W returned DdbInx 0x%x pTpb %p`	iSCSI	Error	A TCP retry for a frame failed on the connection ddbIndex. Tpb contains the frame memory address.
86347	`#%d: QLDisable: Restart RISC`	iSCSI	Info	Restart iSCSI processor (RISC).
86349	`#%d: QLEnable: Restart RISC to update EEPROM`	iSCSI	Info	EEPROM updated, restart iSCSI processor (RISC).
86874	`#%d: QLIsrDecodeMailbox: Link up`	iSCSI	Info	Link up reported by iSCSI processor for GE1 or GE2.
87346	`#%d: QLGetFwStateCallback: link 100Mb FDX`	iSCSI	Info	iSCSI controller reported a link speed/configuration of 100Mb full-duplex (FDX).
87348	`#%d: QLGetFwStateCallback: link 1000Mb FDX`	iSCSI	Info	iSCSI controller reported a link speed/configuration of 1000Mb FDX.
87350	`#%d: QLGetFwStateCallback: Invalid link speed 0x%x`	iSCSI	Info	iSCSI controller reported an invalid link speed.
102419	`#%d: qlutm_init: Diagnostic failed, port 1 invalid SRAM`	FC	Fatal	FC1 processor SRAM test failed.
102420	`#%d: qlutm_init: Diagnostic failed, port 1 POST failed`	FC	Fatal	FC1 processor power-on self-test (POST) failed.
102421	`#%d: qlutm_init: Diagnostic failed, port 2 invalid SRAM`	FC	Fatal	FC2 processor SRAM test failed.
102422	`#%d: qlutm_init: Diagnostic failed, port 2 POST failed`	FC	Fatal	FC2 processor POST failed.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
102423	`#%d: qlutm_init: Failed to return diagnostic result to Bridge`	FC	Fatal	Fibre Channel processor failed to return diagnostic results.
102656	`#%d: QLInitializeAdapter: Reset ISP failed`	FC	Fatal	Fibre Channel processor failed reset.
102657	`#%d: QLInitializeAdapter: Load RISC code failed`	FC	Fatal	Fibre Channel processor firmware load failed.
102658	`#%d: QLInitializeAdapter: Load ISP2322 receive sequencer code failed`	FC	Fatal	Fibre Channel processor receive sequencer code load failed.
102659	`#%d: QLInitializeAdapter: Load ISP2322 transmit sequencer code failed`	FC	Fatal	Fibre Channel processor transmit sequencer code load failed.
102662	`#%d: QLInitializeAdapter: Verify Checksum command failed (%x)`	FC	Fatal	Fibre Channel processor firmware checksum failed.
102680	`#%d: QLInitializeFW: FAILED`	FC	Fatal	Fibre Channel processor firmware initialization failed.
102688	`#%d: QLInterruptServiceRoutine: Risc pause %x with parity error hccr %x, Disable adapter`	FC	Fatal	Fibre Channel processor paused due to internal parity error.
102689	`#%d: QLInterruptServiceRoutine: Invalid interrupt status: %x`	FC	Fatal	Fibre Channel processor returned an invalid interrupt status.
102716	`#%d: QLIsrEventHandler: System error event (%x), MB1=%x, MB2=%x, MB3=%x, MB4=%x, MB5=%x, MB6=%x, MB7=%x`	FC	Fatal	Fibre Channel processor system error.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
102746	`#%d: QLProcessResponseQueue: Invalid handle %x, type %x`	FC	Fatal	Response queue entry contains an invalid handle.
102752	`#%d: QLTimer: Ext Ram parity error exceed limit cnt 0x%x, limit 0x%x, Disabled adapter`	FC	Fatal	Fibre Channel processor external SRAM parity error count exceeded limit; Fibre Channel port disabled.
102755	`#%d: QLTimer: Heartbeat failed`	FC	Fatal	Fibre Channel processor heartbeat failed.
102800	`#%d: QLRestartRisc: restart RISC`	FC	Fatal	Fibre Channel processor being restarted.
106583	`#%d: QLUtmReceiveIo: Path invalid/FW No resource count %x`	FC	Error	Fibre Channel processor received a SCSI command for an unknown target path or has run out of resources to execute additional commands.
106589	`#%d: QLIoctlEnable: Adapter disabled`	FC	Error	Fibre Channel processor was disabled by an IOCTL request to the driver.
106590	`#%d: QLIoctlEnable: Initialize FW error`	FC	Error	Fibre Channel processor firmware failed initialization. The request to initialize was received by the driver in an IOCTL request.
106592	`#%d: QLIoctlRunDiag: Diagnostic loopback command failed %x % %x %x`	FC	Error	Fibre Channel processor failed the external loopback test.
106593	`#%d: QLIoctlDisable: Re-initialize adapter failed`	FC	Error	Fibre Channel processor failed to re-initialize in response to an IOCTL disable request.
106803	`#%d: QLIsrEventHandler: Link down (%x)`	FC	Error	Fibre Channel processor reported a link down condition.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
106813	`#%d: QLIsrEventHandler: Unexpected async event (%x), MB1=%x, MB2=%x, MB3=%x, MB4=%x, MB5=%x, MB6=%x, MB7=%x`	FC	Error	Fibre Channel processor reported an unexpected asynchronous event. The mailbox registers provide status, event code, and data related to the event.
106847	`#%d: QLProcessResponseQueue: Invalid EntryStatus %x, type %x`	FC	Error	Fibre Channel controller reported an invalid Entry Status %x, type %x.
106851	`#%d: QLTimer: Heartbeat failed`	FC	Error	Fibre Channel controller failed to provide a heartbeat.
106853	`#%d: QLTimer: Link error count (0x%x) exceeded, link down`	FC	Error	Driver has determined that the Fibre Channel link is unreliable and unusable due to the number of errors encountered. The link has been taken down.
106912	`#%d: QLReserveLoopId: out of loop Ids`	FC	Error	Fibre Channel processor was unable to obtain the number of loop IDs required. This failure occurs only when the Fibre Channel processor is running multi-ID firmware.
106928	`#%d: QLMarkDeviceOffline: Device Id: %x marked offline, cLinkDownTimeout = %x, cPortDownRetryCount=%x`	FC	Error	Driver was unable to re-establish connection to the target within the timeout and retry counts, and is therefore marking it *offline*.
106948	`#%d: QLSnsGetAllNext: Name server login FAILED %x`	FC	Error	Fibre Channel processor is unable to log into the Fibre Channel fabric name server.
107029	`#%d: QLUpdateDeviceData: out of slots in host database`	FC	Error	Driver’s host (initiator) database is full.
107030	`#%d: QLUpdateDeviceData: out of slots in target database`	FC	Error	Driver’s target database is full.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
107041	`#%d: QLUpdateDeviceDatabase 0x%x: GET_ID failed %x`	FC	Error	Driver's host (initiator) database is full. Maximum host database is 64.
107056	`#%d: QLUpdateDeviceDatabase 0x%x: out of slots in host database`	FC	Error	Drivers host (initiator) database is full.
107078	`#%d: QLUpdatePort 0x%x: out of slots in host database`	FC	Error	Driver was unable to re-establish connection to the target within the timeout and retry counts, and is therefore marking it *offline*.
107984	`#%d: QLWriteFlashDword: Write fails at addr 0x%x data 0x%x`	FC	Error	Fibre Channel controller failed a Flash write (address *x* data *x*).
108032	`#%d: QLGetVpDatabase: MBOX_CMD_GET_VP_DATABASE for VP %d fatal error`	FC	Error	Fibre Channel controller failed the Get VP Database command (for virtual port %d).
108033	`#%d: QLGetVpDatabase: MBOX_CMD_GET_VP_DATABASE for VP %d failed %x`	FC	Error	Fibre Channel controller failed the Get VP Database command (for virtual port %d) with status *x*.
108049	`#%d: QLVerifyMenloFw: EXECUTE_COMMAND_IOCB failed MB0 %x MB1 %x`	FC	Error	Fibre Channel controller reported failure status for an Execute IOCB (input/output control block) command.
108050	`#%d: QLVerifyMenloFw: EXECUTE_COMMAND_IOCB fatal error`	FC	Error	Fibre Channel controller reported a fatal error while processing an Execute IOCB command.
108064	`#%d: QLGetFwState: Get Firmware State failed 0-3 %x %x %x %x`	FC	Error	Fibre Channel controller reported failure status for a Get Firmware State command.
118882	`#%d: QLIoctlDisable: Reset adapter`	FC	Info	Request to reset the Fibre Channel processor (adapter) received from IOCTL interface.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
119088	`#%d: QLIsrEventHandler: LIP occurred (%x): mailbox1 = %x`	FC	Info	Fibre Channel loop initialization process (LIP) occurred. The LIP type is reported, as is the contents of the Fibre Channel processor's mailbox 1 register.
119089	`#%d: QLIsrEventHandler: LIP reset occurred (%x): mailbox1 = %x`	FC	Info	Fibre Channel LIP reset occurred. The LIP reset type is reported, as is the contents of the Fibre Channel processor's mailbox 1 register.
119090	`#%d: QLIsrEventHandler: Link up (%x) mailbox1 = %x`	FC	Info	Fibre Channel link up occurred. Event status is reported, as is the contents of the Fibre Channel processor's mailbox 1 register.
119092	`#%d: QLIsrEventHandler: Link mode up (%x): RunTimeMode=%x`	FC	Info	Fibre Channel link up occurred. Event status is reported, as is the RunTimeMode (0 = loop, 1 = point-to-point).
119093	`#%d: QLIsrEventHandler: RSCN update (%x) rscnInfo: %x`	FC	Info	An RSCN was received. Event status is reported, as is the RSCN information.
119097	`#%d: QLIsrEventHandler: Port update (%x) mb1-3 %x %x %x`	FC	Info	Fibre Channel port update. Event status is reported, as is the contents of the Fibre Channel processor's mailbox 1, 2, and 3 registers.
119144	`#%d: QLTimer: VP %d discover a reject device PID %02x%02x%02x`	FC	Info	A virtual port logged into a device, but the device rejects the login.
120278	`#%d: QLFlashGetNvram: Invalid Serial Link Control 0x%x for port %d`	FC	Info	Update NVRAM for the invalid Serial Link Control for mezzanine platform.
120373	`#%d: QLIsrEventHandler: DCBX Completed (%x)`	FC	Info	For FCoE protocol, the data center bridging exchange (DCBX) protocol completes.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
120374	`#%d: QLIsrEventHandler: IDC Completion (%x) %x, %x, %x, %x, %x, %x, %x`	FC	Info	For FCoE protocol, the inter-driver communications (IDC) completes.
120375	`#%d: QLIsrEventHandler: IDC Notification (%x), %x, %x, %x, %x, %x, %x, %x`	FC	Info	For FCoE protocol, the IDC notification comes from another driver.
120376	`#%d: QLIsrEventHandler: IDC Time Extended (%x), %x, %x, %x, %x, %x, %x, %x`	FC	Info	For FCoE protocol, the IDC time extended notification receives.
120377	`#%d: QLIsrEventHandler: DCBX Started (%x)`	FC	Info	For FCoE protocol, the DCBX protocol has started.
120378	`#%d: QLIsrEventHandler: FCF Config Error (%x), MB1=%x`	FC	Info	For FCoE protocol, the FCoE forwarder (FCF) configuration error occurred.
120379	`#%d: QLIsrEventHandler: DCBX Parameter Changed (%x)`	FC	Info	For FCoE protocol, the DCBX parameters are changed.
139265	`QBRPC_Initialize: Entered`	User	Error	Remote procedure call (RPC) server initialization entry point.
139266	`QBRPC_Initialize:GetBridge Mem Allocation error`	User	Error	Get System API memory allocation failed.
139267	`QBRPC_Initialize:GetBridgeAdv Mem Allocation error`	User	Error	Get System Advanced API memory allocation failed.
139268	`QBRPC_Initialize:GetMgmt Mem Allocation error`	User	Error	Get Management API memory allocation failed.
139269	`QBRPC_Initialize:GetIscsi Mem Allocation error`	User	Error	Get iSCSI API memory allocation failed.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
139270	QBRPC_Initialize:GetIscsiAdv Mem Allocation error	User	Error	Get iSCSI Advanced API memory allocation failed.
139271	QBRPC_Initialize:GetIsns Mem Allocation error	User	Error	Get iSNS API memory allocation failed.
139272	QBRPC_Initialize:GetFcIntfc Mem Allocation error	User	Error	Get Fibre Channel Interface API memory allocation failed.
139273	QBRPC_Initialize:GetFcAdv Mem Allocation error	User	Error	Get Fibre Channel Advanced API memory allocation failed.
139280	QBRPC_Initialize:GetFcSfp Mem Allocation error	User	Error	Failed memory allocation for Get Fibre Channel SFP API.
139281	QBRPC_Initialize:GetLog Mem Allocation error	User	Error	Failed memory allocation for Get Log API.
139282	QBRPC_Initialize:GetStats Mem Allocation error	User	Error	Failed memory allocation for Get Statistics API.
139283	QBRPC_Initialize:InitListMem Allocation error	User	Error	Failed memory allocation for Get Initiator List API.
139284	QBRPC_Initialize:TargetList Mem Allocation error	User	Error	Failed memory allocation for Get Target List API.
139285	QBRPC_Initialize:LunList MemAllocation error	User	Error	Failed memory allocation for Get LUN List API.
139286	QBRPC_Initialize:PresTarget Mem Allocation error	User	Error	Failed memory allocation for Get Presented Targets List API.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
139287	QBRPC_Initialize:LunMask Mem Allocation error	User	Error	Failed memory allocation for Get LUN Mask API.
139288	QBRPC_Initialize:Init Mem Allocation error	User	Error	Failed memory allocation for Initiator API.
139289	QBRPC_Initialize:TgtDevice Mem Allocation error	User	Error	Failed memory allocation for Target Device API.
139296	QBRPC_Initialize:FcTgt Mem Allocation error	User	Error	Failed memory allocation for Fibre Channel Target API.
139297	QBRPC_Initialize:BridgeStatus Mem Allocation error	User	Error	Failed memory allocation for System Status API.
139298	QBRPC_Initialize:Diag Mem Allocation error	User	Error	Failed memory allocation for Diagnostic API.
139299	QBRPC_Initialize:DiagLog Mem Allocation error	User	Error	Failed memory allocation for Diagnostic Log API.
139300	QBRPC_Initialize:FruImage Mem Allocation error	User	Error	Failed memory allocation for FRU Image API.
139301	QBRPC_Initialize:OemMfg Mem Allocation error	User	Error	Failed memory allocation for OEM Manufacturing API.
139302	QBRPC_Initialize:Status Mem Allocation error	User	Error	Failed memory allocation for Status API.
139303	QBRPC_Initialize:TcpIpStats Mem Allocation error	User	Error	Failed memory allocation for TCP/IP Statistics API.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
139304	QBRPC_Initialize:NtpStats Mem Allocation error	User	Error	Failed memory allocation for NTP Status API.
139305	QBRPC_Initialize:LunList MemAlloc error	User	Error	Failed memory allocation for LUN List API.
139315	QBRPC_FreeResources:Entered	User	Error	RPC free resources entry point.
139553	checkDuplicateIp: Detected Error %08x %08x%04x	User	Error	Detected duplicate IP address for management port.
139930	FcipRoute#%d Failed with Memory Allocation Error	App	Error	FCIP route add/mod failed because of lack of memory.
139931	FcipRoute#%d Failed with Invalid Arg Error	App	Error	FCIP route add/mod failed because the arguments supplied were incorrect.
139932	FcipRoute#%d Failed with Unknown Device Error	App	Error	FCIP route add/mod failed because of incorrect configuration.
139933	FcipRoute#%d Failed with Kernel Error	App	Error	FCIP route add/mod failed because of configuration error.
139934	FcipRoute#%d Failed with Network Configuration Error	App	Error	FCIP route add/mod failed because of the Ethernet network.
139935	FcipRoute#%d Failed with Persistence Read Failure	App	Error	FCIP route add/mod failed because of an error in reading the saved configuration from persistence.
139936	FcipRoute#%d Failed with Persistence Write Failure	App	Error	FCIP route add/mod failed because of an error in writing the route configuration to persistence.
139937	FcipRoute#%d Failed with IP Address Reuse Error	App	Error	FCIP route add/mod failed because an IP address supplied is already under use.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
139938	`FcipRoute#%d Add Failed because relevant FCIP Licence not available`	App	Error	FCIP route add/mod failed because an FCIP license is not present.
151842	`FW Upgrade performed: new version is: %d.%d.%d.%d`	User	Info	A firmware upgrade was performed; the new version is: *d.d.d.d*.
151843	`REBOOT/SHUTDOWN Command from user. Code=%d`	User	Info	User issued a REBOOT or SHUTDOWN command.
151889	`#%d: qapisetfcinterfaceparams_1_svc: FC port configuration changed`	User	Info	Fibre Channel port configuration has changed.
151890	`#%d: qapisetiscsiinterfaceparams_1_svc: iSCSI port configuration changed`	User	Info	iSCSI port configuration has changed.
151891	`#%d: qapisetisns_1_svc:iSNS configuration changed`	User	Info	iSNS configuration has changed.
151892	`qapisetntpparams_1_svc: NTP configuration changed`	User	Info	NTP configuration has changed.
151893	`#%d: qapisetvlanparams_1_svc: VLAN configuration changed`	User	Info	VLAN configuration has changed.
151894	`qapisetlunmask_1_svc: Lunmask added for LUN %d`	User	Info	A LUN mask was added for LUN %d.
151895	`qapisetlunmask_1_svc: Lunmask removed for LUN %d`	User	Info	LUN mask was removed for LUN %d.
151896	`qapisetmgmintfcparams_1_svc:Management port configuration changed`	User	Info	Management port configuration has changed.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
151897	`qapisetbridgebasicinfo_1_svc:Bridge configuration changed`	User	Info	Router configuration has changed.
151908	`GE%d: Port status changed by user to ENABLED.`	User	Info	GE port %d was enabled by user.
151909	`GE%d: Port status changed by user to DISABLED.`	User	Info	GE port %d was disabled by user.
151910	`FC%d: Port status changed by user to ENABLED.`	User	Info	Fibre Channel port %d was enabled by user.
151911	`FC%d: Port status changed by user to DISABLED.`	User	Info	Fibre Channel port %d was disabled by user.
151912	`qapimaptargetdevice_1_svc: Target WWPN: %.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x mapped to iSCSI portal %d.`	User	Info	Target at WWPN: *xx.xx.xx.xx.xx.xx.xx.xx* has been mapped to iSCSI portal %d.
151913	`qapimaptargetdevice_1_svc: Target WWPN: %.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x unmapped from iSCSI portal %d.`	User	Info	Target at WWPN: *xx.xx.xx.xx.xx.xx.xx.xx* has been unmapped from iSCSI portal %d
152069	`FcipRoute#%d Added`	App	Info	FCIP route #*n* has been successfully added.
152070	`FcipRoute#%d Modified`	App	Info	FCIP route #*n* has been successfully modified.
152071	`FcipRoute#%d Removed`	App	Info	FCIP route #*n* has been successfully removed.
152082	`qapiaddmodifyinitiator_1_svc : Initiator Configuration Changed`	User	Info	An initiator's configuration has changed.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
152083	`qapiremoveinitiator_1_svc : Initiator Removed`	User	Info	An initiator has been removed.
152096	`qapisetmigrfctargets_1_svc: Configuration Changed for migration target`	User	Info	A set array was done on one of the arrays.
152099	`LogMigration: Error in Writting log file`	User	Info	Encountered an error while updating the migration log entry. Some migration log entries might be missing.
152100	`qapiaddgroup_1_svc: Added Group with id %d`	User	Info	Group with ID specified in the log was added.
152101	`qapiremovegroup_1_svc: Removed Group with id %d`	User	Info	Group with ID specified in the log was removed.
152102	`qapiupdategroup_1_svc: Updated Group with id %d`	User	Info	Group with ID specified in the log was updated.
152103	`qapisetserialjobs_1_svc: Serial Time %lu`	User	Info	Serial schedule jobs scheduled to start at time specified in the log.
152104	`qapireadjustpriority_1_svc: Readjust Priority Failed on line %d with error %d`	User	Info	Readjust priority command completed with an error. Error code 2 indicates no scheduled jobs were found. Error code 16 indicates a job with priority 1 configured.
152105	`qapireadjustpriority_1_svc: Readjust Priority Done`	User	Info	Completed readjusting the serial schedule priority of migration jobs.
152106	`qapiupdatemigration_1_svc: Update Migration returned with error %d`	User	Info	An update migration action [Start/Stop/Pause/Resume] has failed.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
152107	`RemoveMigration:%d with Job Id %d and error = %d`	User	Info	Failed to remove a migration job with ID specified in the log.
152108	`ValidateSerialSchedule: Previous time %ld New time %ld`	User	Info	Reset the serial schedule delayed time to invalid if the last serial schedule job was removed.
152109	`addMigration: Creating migration Job Failed with error %d`	User	Info	Failed to create a migration job.
152141	`sysTempMon: Over Temperature Front: %dC Rear: %dC CPU1: %dC CPU2: %dC`	User	Info	Router has detected an over temperature, Front: %dC Rear: %dC CPU1: %dC CPU2: %dC
152144	`sysTempMon: Temperature back to safe value. Front: %dC Rear: %dC CPU1: %dC CPU2: %dC`	User	Info	Router temperature has returned to normal operating range, Front: %dC Rear: %dC CPU1: %dC CPU2: %dC
152145	`sysTempMon: Critical Temperature, Shutting Down Front: %dC Rear: %dC CPU1: %dC CPU2: %dC`	User	Info	Router has reached a critical temperature and is shutting down, Front: %dC Rear: %dC CPU1: %dC CPU2: %dC.
172040	`FcipRoute#%d: Cleaning FCIP Instance`	FCIP	Error	This is an informative message, not an error. This message indicates an FCIP was removed or modified.
172231	`FcipRoute#%d: Did not get the keepalive msg form remote peer`	FCIP	Error	FCIP route #*n* has not been able to communicate with the remote peer for 10 seconds.
172238	`FcipRoute#%d: Synchronization Error on Receive`	FCIP	Error	FCIP route #*n* local node is out of sync with the remote peer.
172239	`FcipRoute#%d: Decompression Error on Receive`	FCIP	Error	FCIP route #*n* detected an error in decompression.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
172240	`FcipRoute#%d: De-encapsulation Error on Receive`	FCIP	Error	FCIP route #*n* Local Node is out of sync with the remote peer.
172245	`FcipRoute#%d: Transmit Failure`	FCIP	Error	FCIP route #*n* not able to transmit data.
172246	`FcipRoute#%d: Remote Peer Disconnected`	FCIP	Error	FCIP route #*n* remote peer closed connection.
172247	`FcipRoute#%d: Failed to send FC Up/Down`	FCIP	Error	Not able to bring the Fibre Channel port up or down.
172249	`FcipRoute#%d: FCIP Link Down`	FCIP	Error	FCIP link is down for FCIP route #*n*.
172250	`FcipRoute#%d: TCP Link Down`	FCIP	Error	TCP link for FCIP route #*n* has been established.
172253	`FcipRoute#%d: Remote Peer IP Address Validation Failed. Expected IP Address: %d.%d.%d.%d, Actual IP Address: %d.%d.%d.%d`	FCIP	Error	FCIP route #*n*: Received connection from unauthorized remote peer.
172272	`FcipRoute#%d: Tcp Client's connect attempt failed`	FCIP	Error	FCIP route #*n* was not able to establish the TCP connection with remote peer.
172273	`FcipRoute#%d: Tcp Server's Listen attempt failed`	FCIP	Error	FCIP route #*n* is not able to establish the TCP connection with remote peer.
172300	`FcipRoute#%d: tcpi_total_retrans %d, tcpi_reordering %d, tcpi_probes %d`	FCIP	Error	Displays FCIP route #*n*'s WAN characteristics, including TCP total retransmission for entire connection (tcpi_total_retrans), packet reordering metric (tcpi_reordering), and unanswered zero window probe (tcpi_probes).

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
172301	`FcipRoute#%d: Did not get the keepalive msg form remote peer last %lu, curr %lu`	FCIP	Error	The FCIP route #*n* has not been able to communicate with its remote peer for 10 seconds, resulting in a link drop due to a keepalive timeout.
172302	`FcipRoute#%d: TCP Link Down, TCP Stats: SACKed=%d TCP Total ReTransmitted=%d`	FCIP	Error	The TCP link for FCIP route #*n* has disconnected. The TCP statistics for the connection include total selective acknowledgements (SACKs) and total retransmission for the connection.
172303	`FcipRoute#%d: TCP Link Down, MAC Stats: Tx Dropped Count=%ld Rx Dropped Count=%ld Tx Pause Count=%ld Rx Pause Count=%ld`	FCIP	Error	The TCP link for FCIP route #*n* has disconnected. The MAC or Ethernet statistics include total packet dropped during transmit (TxDropped), total packet dropped during receive (RxDropped), total Ethernet pause frames transmitted (TxPause), and total Ethernet pause frames received (RxPause).
172304	`FcipRoute#%d: Tcp Retranmissions in last 10 Sec %d, OutStanding Completions %d FC Frames`	FCIP	Error	The total number of TCP retransmissions that occurred in the last 10 seconds before the link was brought down due to a keepalive timeout. It also displays the total number of outstanding transmissions that were pending to be transmitted through the GbE port.
172322	`FcipRoute#%d: FC link on the remote peer went down`	FCIP	Error	The FCIP route #*n* went down because the Fibre Channel port on the remote peer went down.
184515	`FcipRoute#%d: TCP Link Up`	FCIP	Info	TCP link for FCIP route #n has been established.
184536	`FcipRoute#%d: FCIP Link Up`	FCIP	Info	FCIP link is up for FCIP route #n.
184542	`FcipRoute#%d: VLAN Info Unavailable`	FCIP	Error	FCIP route #n: Incorrect VLAN configuration.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
205571	`QL3xxx:%s: Auto Negotiation error detected`	NIC	Error	Ethernet port was not able to negotiate the configured speed.
205572	`QL3xxx:eth%d: Unsupported speed portConfig 0x%x`	NIC	Error	Ethernet port speed is not supported.
206080	`QL3xxx:ql3xxx_probe: cannot allocate ethernet device %s`	NIC	Error	Ethernet device could not be configured.
206089	`QL3xxx:ql3xxx_probe: cannot register network device %s`	NIC	Error	The Ethernet port was not able to register as a network device, resulting in a port initialization error for the specified network device.
206114	`QL3xxx:eth%d: TCP/IP checksum error - TotalChecksumErrorCount = %lu`	N IC	Error	The total number of TCP checksum errors detected on the Ethernet link belonging to the eth#%d port.
217856	`QL3xxx:%s: PHY Downshift occurred`	NIC	Info	Ethernet port is operating at 100mbps speed.
217857	`QL3xxx:%s: Link Up`	NIC	Info	Ethernet link is up.
217858	`QL3xxx:%s: Link Down`	NIC	Info	Ethernet link is down.
218389	`QL3xxx:%s Adapter Down`	NIC	Info	Ethernet port is down.
218401	`QL3xxx:%s Adapter Up`	NIC	Info	Ethernet port is up.
233473	`"memory monitor: Detected Uncorrectable Ecc %08lx system is rebooting in 5 secs\n"`	System	Fatal	Uncorrectable memory error detected at address provided in log message.
233474	`"Failed to register interrupt handler!\n"`	System	Fatal	Attempt to register the interrupt handler failed.
233475	`"%s class_simple_create failed\n"`	System	Fatal	Failed `class_simple_create` system call from memory monitor initialization routine.

Table B-1. iSR6152 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
237572	`"Failed to kill sys killer %d\n"`	System	Error	Failed to kill system task.
237573	`Temperature over high threshold %d`	System	Error	Router temperature has exceeded the high temperature threshold.
249862	`Temperature is back to normal range %d`	System	Info	Router temperature has returned to the normal operating range.

Glossary

adapter

The board that interfaces between the host system and the target devices. Adapter is synonymous with *host bus adapter (HBA)*, *host adapter*, and a*dapter board*.

adapter port

A port on the adapter board.

adapter port beacon

An LED on the adapter. Flashing it enables you to locate the adapter.

arbitrated loop

A circular (ring) topology (versus point-to-point) where two or more ports can be interconnected, but only two ports can communicate at a time. All communication passes through all ports connected to the loop.

bandwidth

A measure of the volume of data that can be transmitted at a specific transmission rate. A 1Gbps or 2Gbps Fibre Channel port can transmit or receive at nominal rates of 1Gbps or 2Gbps, depending on the device to which it is connected. This rate corresponds to actual bandwidth values of 106MB and 212MB, respectively.

challenge-handshake authentication protocol

See CHAP.

CHAP

Challenge-handshake authentication protocol. CHAP is used for remote logon, usually between a client and server or a Web browser and Web server. A challenge/response is a security mechanism for verifying the identity of a person or process without revealing a secret password that is shared by the two entities. CHAP is also referred to as a *three-way handshake*.

CLI

Command line interface. A program interface driven by entering commands and parameters.

command line interface

See CLI.

CRC

Cyclic redundancy check. A type of check value designed to catch most transmission errors.

CSV file

Comma separated values file.

cyclic redundancy check

See CRC.

device

A target, typically a disk drive. Hardware such as a disk drive, tape drive, printer, or keyboard that is installed in or connected to a system. In Fibre Channel, a *target* device.

DHCP

Dynamic host configuration protocol. Used by networked devices (clients) to obtain various parameters necessary for the clients to operate in an IP network.

driver

The software that interfaces between the file system and a physical data storage device or network media.

E_Port

Expansion port. A port in a Fibre Channel switch that connects to another Fibre Channel switch or bridge device by an inter-switch link. E_Ports are used to link Fibre Channel switches to form a multi-switch fabric.

EEPROM

Electrically erasable programmable read-only memory. Memory that can be erased (entirely, not selectively) using higher electrical voltages.

electrically erasable programmable read-only memory

See EEPROM.

Enhanced Ethernet

Also called *data center Ethernet* or *converged enhanced Ethernet*. Refers to new enhancements to the existing Ethernet standard that eliminate Ethernet's inherently lossy nature and make 10Gb Ethernet a viable storage networking transport.

Ethernet

The most widely used LAN technology that transmits information between computer, typically at speeds of 10 and 100 million bits per second (Mbps).

expansion port

See E_Port.

F_Port

The *fabric* port in a Fibre Channel fabric switch provides a point-to-point link attachment to a single N_Port. F_Ports are intermediate ports in virtual point-to-point links between end ports, such as N_Port to F_Port to F_Port to N_Port using a single Fibre Channel fabric switch.

fabric

A fabric consists of cross-connected Fibre Channel devices and switches.

fabric loop port

See FL_Port.

fabric port

An F_Port or FL_Port.

fabric switch

Also, switched fabric. A fabric switch connects multiple devices from independent Fibre Channel-arbitrated loops (FC-ALs) and point-to-point topologies into a fabric using Fibre Channel switches.

failover path

Software feature that ensures data availability and system reliability by assigning alternate path and automatic adapter failover for device resources. This feature is available only in Windows 2000, Windows Server 2003, Windows Vista, Novell NetWare, Red Hat Linux, and SUSE Linux. (Windows XP and Windows Server 2008 do *not* support failover.)

FC

See Fibre Channel.

FC-IP mode

Data transportation mode in which the iSR6152 transports Fibre Channel frames over a TCP/IP connection using the FCIP protocol to connect two iSR6152 routers. In FC-IP mode, a port pair (one Fibre Channel port and an IP port on the same router) on local iSR6152 and another port pair on a remote router form a FCIP route.

FCIP

Fibre Channel over IP. Protocol that enables transmission of Fibre Channel information by tunneling data on a SAN over IP networks. An alternative to iSCSI. Also known as *Fibre Channel tunneling*.

FCoE

Fibre Channel over Ethernet. A new technology defined by the T11 standards body that allows traditional Fibre Channel storage networking traffic to travel over an Ethernet link by encapsulating Fibre Channel frames inside Layer 2 Ethernet frames. For more information, visit www.fcoe.com.

FCP

Fibre Channel protocol. SCSI to Fibre Channel mapping.

Fibre Channel

A high-speed serial interface technology that supports other higher layer protocols such as SCSI and IP.

Fibre Channel over Ethernet

See FCoE.

Fibre Channel over IP

See FCIP.

field replaceable unit

See FRU.

firmware

(1) Low-level software typically loaded into read-only memory and used to boot and operate an intelligent device. (2) Software embedded in a hardware device.

FL_Port

Fabric loop port. In Fibre Channel, the fabric switch is capable of Fibre Channel arbitrated loop operations and is connected to one or more NL_Ports by a Fibre Channel Arbitrated Loop. An FL_Port becomes a shared entry point for public NL_Port devices to a Fibre Channel fabric. FL_Ports are intermediate ports in virtual point-to-point links between end ports that do not reside on the same loop, for example NL_Port to FL_Port to F_Port to N_Port through a single Fibre Channel fabric switch.

Flash

Non-volatile memory where the boot code is saved. At times, Flash and *boot code* are used interchangeably.

frame

Data unit consisting of a start-of-frame (SOF) delimiter, header, data payload, CRC, and an end-of-frame (EOF) delimiter.

FRU

Field replaceable unit. Component that can be replaced in the field upon failure.

G_Port

Generic port. A port that can operate as either an E_Port or an F_Port. A G_Port can determine operating mode at switch port initialization, F_Port when an N_Port attachment is determined, E_Port when an E_Port attachment is determined. See E_Port, F_Port, FL_Port, L_Port, N_Port, NL_Port.

generic port

See G_Port.

heartbeat LED

A chassis LED that indicates the router status.

hot replaceable

Also known as *hot swappable*, this means you can add new devices or remove existing ones when the system is running.

IANA

Internet Assigned Numbers Authority (IANA) is responsible for the global coordination of the DNS root, IP addressing, and other Internet protocol resources.

initiator

System component, such as a network interface card, that originates an I/O operation.

Internet Assigned Numbers Authority

See IANA.

Internet Protocol

See IP.

Internet small computer system interface

See iSCSI.

IOCB

Input/output control block. A command structure in QLogic intelligent storage peripheral (ISP) architecture.

IOCTL

Input/output control. A system call in Unix and Linux systems that allows an application to control or communicate with a device driver outside usual read/write operations.

IP

Internet Protocol. A method by which data are sent from one computer to another over the Internet. IP specifies the format of packets, also called *datagrams*, and the addressing scheme.

iSCSI

Internet small computer system interface. Protocol that encapsulates data into IP packets to send over Ethernet connections.

iSNS

Internet simple name service is used for discovery and management of IP-based SANs.

jumbo frames

Large IP frames used in high-performance networks to increase performance over long distances. Jumbo frames generally means 9,000 bytes for Gigabit Ethernet, but can refer to anything over the IP MTU, which is 1,500 bytes on an Ethernet.

L_Port

Loop port. Does arbitrated loop functions and protocols. NL_Ports and FL_Ports are examples of loop-capable ports. See E_Port, F_Port, FL_Port, G_Port, N_Port, NL_Port.

loop port

See L_Port.

LIP

Loop initialization process. The initialization process in an arbitrated loop that occurs when the loop is powered up or a new device is added. One function of a LIP is to assign addresses. All data transmission on the loop is suspended during a LIP.

load balancing

A software feature that improves system performance by balancing device access between multiple ports for maximum resource efficiency.

loop initialization process

See LIP.

loopback

Diagnostic tool that routes transmit data through a loopback connector back to the same adapter.

LUN

Logical unit number, a subdivision of a SCSI target. It is the small integer handle that differentiates an individual disk drive or partition (volume) within a common SCSI target device such as a disk array.

Technically, a LUN can be a single physical disk drive, multiple physical disk drives, or a portion (volume) of a single physical disk drive. However, LUNs are typically not entire disk drives but rather virtual partitions (volumes) of a RAID set.

Using LUNs, the Fibre Channel host can multiple peripheral devices that may share a common controller.

maintenance button

Multifunction momentary switch on the front panel of the router.

management workstation

PC workstation used to manage routers remotely by connecting to the routers using the SANsurfer Router Manager or CLI commands.

maximum transmission unit

See MTU.

media

Physical-layer information carriers. Fibre Channel supports several different physical media: copper, multimode optical, and single-mode optical. All Fibre Channel protocols are supported on all media.

MIB

Management information base. A set of guidelines and definitions for SNMP functions.

MTU

Maximum transmission unit. Refers to the size (in bytes) of the largest packet (IP datagram) that a specified layer of a communications protocol can transfer.

N_Port

Node port. Connects by a point-to-point link to either a single N_Port or a single F_Port. N_Ports handle creation, detection, and flow of message units to and from the connected systems. N_Ports are end ports in virtual point-to-point links through a fabric, for example N_Port to F_Port to F_Port to N_Port using a single Fibre Channel fabric switch. See also FL_Port.

NL_Port

Node loop port. A port capable of arbitrated loop functions and protocols. An NL_Port connects through an arbitrated loop to other NL_Port and at most a single FL_Port. NL_Ports handle creation, detection, and flow of message units to and from the connected systems. NL_Ports are end ports in virtual point-to-point links through a fabric, such as NL_Port to F_Port to F_Port to N_Port using a single Fibre Channel fabric switch. In the absence of a fabric switch FL_Port, NL_Ports can communicate with other NL_Ports in virtual point-to-point links through an FC_AL open loop circuit often through an FC_AL (arbitrated loop) hub or loop switch devices. See: E_Port, F_Port, FL_Port, G_Port, N_Port.

network time protocol

See NTP.

non-volatile random access memory

See NVRAM.

NTP

Network time protocol. NTP is used for distributing the Coordinated Universal Time (UTC) by means of synchronizing the clocks of computer systems over packet-switched, variable-latency data networks.

NVRAM

Non-volatile random access memory. NVRAM is a type of memory that retains data (including configuration settings) even when power is removed. You can configure NVRAM settings manually or restore them from a file.

path

A path to a device is a combination of a adapter port instance and a target port as distinct from internal paths in the fabric network. A fabric network appears to the operating system as an opaque network between the adapter (initiator) and the target.

Because a path is a combination of an adapter and a target port, it is distinct from another path if it is accessed through a different adapter or it is accessing a different target port. Consequently, when switching from one path to another, the driver might be selecting a different adapter (initiator), a different target port, or both.

This distinction is important to the driver when selecting the proper method of failover notification. It can make a difference to the target device, which might have to take different actions when receiving retries of the request from another initiator or on a different port.

point-to-point

Also FC-P2P. Two Fibre Channel nodes directly connected (not in a loop).

port

Access points in a device where a link attaches. There are four types of ports, as follows:

- N_Port—a Fibre Channel port that supports point-to-point topology.
- NL_Port—a Fibre Channel port that supports loop topology.
- F_Port—a port in a fabric where an N_Port can attach.
- FL_Port—a port in a fabric where an NL_Port can attach.

port instance

The number of the port in the system. Each adapter may have one or multiple ports, identified with regard to the adapter as port 0, port 1, and so forth. To avoid confusion when dealing with a system containing numerous ports, each port is assigned a port instance number when the system boots up. Thus port 0 on an adapter might have a port instance number of 8, for example, if it is the eighth port discovered by the system.

POST

Power on self test. Diagnostics that the router performs at start-up.

power on self test

See POST.

reduced instruction set computer

See RISC.

registered state change notification

See RSCN.

RISC

Reduced instruction set computer. A computer microprocessor that performs fewer types of computer instructions, thereby operating at higher speeds.

router log

Log of messages describing events that occur on the intelligent storage router.

RPC

Remote procedure call. A protocol used by a program to request a service from a program located in another computer in a network. RPC uses the client/server mode.

RSCN

Registered state change notification. RSCN is a Fibre Channel fabric notification sent to all specified nodes when any major fabric changes occur. This notification allows nodes to immediately gain knowledge about the fabric and react accordingly.

SAN

Storage area network. Multiple storage units (disk drives) and servers connected by networking topology.

SANsurfer Router Manager

Also called *iSCSI/FC Router Manager*. Workstation-based router management application that provides a graphical user interface (GUI) used to configure and monitor intelligent storage routers.

SCSI

Small computer system interface. A high-speed interface used to connect devices, such as hard drives, CD drives, printers, and scanners, to a computer. The SCSI can connect many devices using a single controller. Each device is accessed by an individual identification number on the SCSI controller bus.

SFP

Small form-factor pluggable. A transceiver device, smaller than a GigaBit Interface Converter, that plugs into the Fibre Channel port.

simple network management protocol

See SNMP.

small computer system interface

See SCSI.

small form-factor pluggable

See SFP.

SNMP

Simple network management protocol. SNMP is a networking protocol that enables you to monitor the router using third-party applications that use SNMP.

storage area network

See SAN.

target

The storage-device endpoint of a SCSI session. Initiators request data from targets. Targets are typically disk drives, tape drives, or other media devices. Typically a SCSI peripheral device is the target but an adapter may, in some cases, be a target. A target can contain many LUNs.

A target is a device that responds to a requested by an initiator (the host system). Peripherals are targets, but for some commands (for example, a SCSI COPY command), the peripheral may act as an initiator.

TCP

Transmission control protocol. A set of rules to send data in packets over the Internet protocol.

virtual logical area network

See VLAN.

virtual port group

See VPG.

VLAN

Virtual logical area network (LAN). A group of hosts with a common set of requirements that communicate as if they were attached to the same wire, regardless of their physical location. Although a VLAN has the same attributes as a physical LAN, it allows for end stations to be grouped together even if they are not located on the same LAN segment. VLANs enable network reconfiguration through software, instead of physically relocating devices.

VPG

Virtual port group. VPG is the iSR6152 software component used to create additional logical Fibre Channel adapter initiator ports on the fabric.

world wide name

See WWN.

world wide node name

See WWNN.

world wide port name

See WWPN.

world wide unique LUN name

See WWULN.

WWN

World wide name. A unique 64-bit identifier assigned to a device by the device manufacturer.

WWNN

World wide node name. A unique 64-bit identifier assigned to a device.

WWPN

World wide port name. A unique 64-bit identifier assigned to each port on a device. One WWNN may contain multiple WWPN addresses.

WWULN

World wide unique LUN name. Identifiers for SCSI devices are read from page 83 and page 80 of your SCSI block device as based on the SCSI standard. SANsurfer looks for identifiers in the order of: page 83 type 3, page 83 type 2, page 83 type 1, page 80, and lastly page 83 type 0.

Index

A

About box, viewing Router Manager version 2-6
about SANsurfer Router Manager 1-9
access control, target 3-4
action menu, *See* shortcut menu
Active Data Migration Jobs page 4-3
adapter
  definition of Glossary-1
  heartbeat missed error B-16
  login message B-9
  port beacon, definition of Glossary-1
  port, definition of Glossary-1
Add License Key dialog box 3-12
adding
  data management LUN 2-5, 2-8
  data migration group 2-5, 2-8
  FCIP route 2-5, 2-8
  initiator, iSCSI 2-4, 2-8
  license key 3-12
  LUN, scrubbing 2-5, 2-9
  remote router 2-8
  router to router tree 2-6
address
  initiator 2-4, 3-26
  IP, router's 1-2
  iSCSI initiator 3-26
  iSCSI presented target 3-30
  iSCSI target 2-8, 3-33
  iSNS server 3-19
  MAC 3-18
  MAC, management port 3-6
  management port 3-6
  NTP server 3-8
address (*continued*)
  port, iSCSI 3-18
  SNMP trap receiver 3-11
Advanced Configuration page
  Fibre Channel port 3-14
  iSCSI port 3-20
agent, SNMP 3-10
arbitrated loop, definition of Glossary-1
arrays
  bandwidth 3-35
  general information, viewing 3-34
  licensing 2-5, 2-9, 3-35
authentication traps, enabling 3-11, A-2

B

bandwidth
  arrays 3-35
  definition of Glossary-1
  FCIP routes 3-42
base name, iSCSI ports 3-18
Basic Information page 3-3
beacon
  turning off 2-8
  turning on 2-8
blinking router beacon 2-8
Boolean, help system search 1-8
boot loader version 3-3
Broadcast Settings dialog box 2-4
browser
  Browser Location dialog box 1-8
  specifying for help system 1-8, 2-6
burst length, iSCSI port 3-21
buttons, toolbar 2-6

C

CHAP
  authentication error B-4
  configuring 1-x
  definition of Glossary-1
  iSCSI discovered target settings 3-33
  iSCSI initiators settings 3-26
  iSCSI port settings 3-22
  key error B-5
clearing
  data migration info 4-2
  FCIP route statistics 3-42
  iSCSI port statistics 3-22, 3-23
  router security password 3-9
  router statistics values 3-15
  security fields 1-11
CLI, definition of Glossary-1
closing SANsurfer Router Manager 1-13, 2-4
command line interface, *See* CLI
community
  read A-1
  trap A-1
Completed Data Migration Jobs page 4-4
Compression, FCIP routes 3-42
configuration info, saving 2-4
configuring
  data migration jobs 2-5, 2-8
  FCIP route 3-38
  iSCSI port 1-3
  router 1-3
  verifying jobs 2-5, 2-8
Connect button 2-6
connecting
  hardware 1-2
  router, adding to tree 2-6, 2-8
connection mode, port 3-13
contact name for trap events 3-11
contents, help system 1-7
CRC, definition of Glossary-1
creating, *See* adding
CSV file
  definition of Glossary-1
  printing to 3-28, 3-29
cyclic redundancy check, *See* CRC

D

data digest, iSCSI ports 3-22
data management LUN
  adding 2-5, 2-8
  removing 2-5, 2-9
data migration
  clearing info 4-2
  group, adding 2-5, 2-8
  group, removing 2-9
  logs, viewing 2-4
  report, saving 4-2
Data Migration Info page 4-2
data migration jobs
  active 4-3
  completed 4-4
  configuring 2-5, 2-8
  synchronizing jobs 4-4
data rate
  Fibre Channel ports 3-13
  iSCSI ports 3-18
defaults
  factory settings, restoring router to 3-2
  IPv6 router 3-18
  router password 1-10
  router, IPv6 3-7
  SNMP passwords 3-11
definitions of terms Glossary-1
devices
  definition of Glossary-2
  discovered LUN information 3-31
  information 3-27
  iSCSI presented target list 3-30
  target, rescanning for 2-9
DHCP
  definition of Glossary-2
  IP address, obtaining automatically 3-6
  management port 3-6

disabling
  authentication trap generation 3-11
  CHAP 3-36
  NTP servers 3-8
  VPG status 3-24
disconnecting from router 2-8
discovered
  Fibre Channel initiators 3-24, 3-25
  Fibre Channel LUNs 3-31
  iSCSI initiators 3-25, 3-27
  iSCSI targets 3-32
Discovered LUN Information page 3-31
discovering iSCSI targets 2-4, 2-8
driver, definition of Glossary-2
dynamic host configuration protocol, *See* DHCP

E

E_Port, definition of Glossary-2
EEPROM
  definition of Glossary-2
  updated message B-17
electrically erasable programmable read-only memory, *See* EEPROM
enabling
  authentication trap generation 3-11
  CHAP 3-36
  NTP servers 3-8
  SNMP traps 3-11
  VPG status 3-24
error
  detect timeout 3-42
  log message type B-2
Ethernet
  connection requirement 1-2
  definition of Glossary-2
Ethernet ports
  hardware requirements 1-2
  pinging from 2-9
execution throttle, Fibre Channel port 3-14
exiting SANsurfer Router Manager 1-13, 2-4
expansion port, *See* E_Port

F

F_Port, definition of Glossary-2
fabric
  definition of Glossary-2
  Fibre Channel 3-13, 3-35
  name server logon error B-20
fabric loop port, definition of Glossary-3
fabric port, definition of Glossary-2
fabric switch, definition of Glossary-2
factory defaults, restoring to router 3-2
failover path, definition of Glossary-2
FC
  link status, FCIP routes 3-39
  port node 2-14
FC Presented Targets page 3-28
FCIP
  definition of Glossary-3
  routes 3-37
  routes, icon 2-16
FC-IP mode, definition of Glossary-3
FCIP Route Info page 3-38
FCIP routes
  adding 2-5, 2-8
  configuring 3-38
  icons for 2-16
  interfaces status 3-39
  removing 2-5, 2-9
  statistics 3-42
FCoE
  definition of Glossary-3
  informational messages B-22, B-23
FCP
  definition of Glossary-3
  mode, port A-7
Features page 3-12
features, licensed 3-12
Fibre Channel
  discovered initiators 3-24
  port count 3-4
  targets, discovered LUNs 3-31
Fibre Channel over Ethernet, *See* FCoE
Fibre Channel over IP, *See* FCIP

Fibre Channel ports 3-12, 4-3
  advanced configuration 3-14
  FCIP routes 3-39
  icon 2-14
  information, viewing 3-13
  MIB A-6
  number of 3-4
  performance graph 3-15
  performance, viewing graph 3-15
  statistics, viewing 3-14
Fibre Channel protocol, *See* FCP
Fibre Channel targets
  discovered 3-27
  presented, information 3-28
field replaceable unit, *See* FRU
File menu 2-3
firmware
  definition of Glossary-3
  loading 3-2
  updating 1-3, 2-3, 2-9, 3-2
Firmware Load dialog box 3-2
FL_Port, definition of Glossary-3
Flash, definition of Glossary-3
flashing router beacon 2-8
flow control
  GbE port 3-41
  iSCSI ports 3-18
frame
  definition of Glossary-3
  size, Fibre Channel port 3-14
FRU
  definition of Glossary-3
  restoring 2-4
  saving 2-3
FW Update Wizard 1-4

G

G_Port, definition of Glossary-4
gateway IP address, FCIP routes 3-39
GbE port
  FCIP routes 3-39
  flow control 3-41
  link rate 3-41
GigE port, *See* GbE (gigabit Ethernet) port
glossary of terms Glossary-1
graphical user interface (GUI), *See* interface
groups
  data migration, adding 2-5, 2-8
  data migration, removing 2-9
  name, virtual port 3-24
GUI, *See* interface

H

hardware
  connecting 1-2
  router version 3-3
header digest, iSCSI ports 3-21
heartbeat LED, definition of Glossary-4
Help menu 2-6
help system
  browser, specifying 1-8, 2-6
  contents, viewing 2-6
  viewing 1-7
hiding, help system navigation pane 1-8
host information, importing 2-4
hot replaceable/hot swappable, definition of Glossary-4

I

IANA
  definition of Glossary-4
  value, FC port type A-8
icons
  port 2-14
  router chassis 2-14
importing host and LUN information 2-4
index
  help system 1-7
  VPG 3-24

information
basic router 3-3
NTP servers 3-8
Information page
arrays 3-34
discovered iSCSI initiators 3-26
FC discovered target 3-29
FC targets, discovered 3-29
Fibre Channel discovered initiator 3-24
Fibre Channel ports 3-13
iSCSI discovered targets 3-32
iSCSI ports 3-17
iSCSI presented targets 3-35
router 3-2
storage arrays 3-34
initiators
definition of Glossary-4
discovered 3-26
Fibre Channel, discovered 3-24
iSCSI, adding 2-4, 2-8
iSCSI, discovered 3-25
remote target, mapping 2-5
removing 2-9
input/output control block, *See* IOCB
input/output control, *See* IOCTL
instance (port), definition of Glossary-7
interface
components of 2-1
description of 1-1
toolbar buttons 2-6
Internet Assigned Numbers Authority, *See* IANA
Internet Protocol, *See* IP
Internet simple name service, *See* iSNS
Internet small computer system interface, *See* iSCSI
IOCB
command failed to execute B-21
definition of Glossary-4
IOCTL
definition of Glossary-4
Fibre Channel reset request from B-21
IP address
presented target 3-30
setting for router 3-7
workstation, setting 1-2
IP, definition of Glossary-4
IPv4
iSCSI ports, address 3-18
iSCSI ports, settings 3-20
management port 3-6
IPv6
iSCSI port address 3-18
iSCSI port settings 3-21
management port 3-7
window scaling, iSCSI ports 3-21
iSCSI
definition of Glossary-4
discovered targets 3-32
mapping targets 2-5, 2-9
presented targets 3-32, 3-35
targets, presented 3-30
iSCSI initiators
adding 2-4, 2-8
discovered 3-25
information, configuring 3-26
iSCSI ports 3-17
advanced configuration 3-20
configuring 1-3
data rate 3-18
information 3-17
iSNS 3-19
network settings 3-18
quantity 3-3
security settings 3-21
statistics 3-22
iSCSI Presented Target List page 3-28
iSCSI targets
discovered 3-32
discovering 2-4, 2-8
presented 3-28
iSCSI/FC Router Manager, definition of Glossary-7
iSNS
definition of Glossary-4
iSCSI ports 3-19

J

jumbo frames
  definition of Glossary-4
  FCIP routes 3-40
  iSCSI ports 3-21
  MTU, setting 3-21

L

L_Port, definition of Glossary-4
LEDs
  adapter port beacon, definition of Glossary-1
  heartbeat, definition of Glossary-4
left pane, *See* tree pane
license keys, adding 3-12
licensed
  arrays 3-35
  features 3-12
licensing an array 2-5, 2-9
link rate
  FCIP routes 3-41
  GbE port 3-41
  mode 3-18
link status
  Fibre Channel port 3-13
  GbE port 3-39
  iSCSI port 3-18
  management port 3-6
LIP
  definition of Glossary-5
  notification of B-22
  reset type B-22
load balancing
  definition of Glossary-5
  enabling for array 3-35
loading firmware 3-2
local IP address, FCIP routes 3-39
log messages B-1
logical unit number (LUN), definition of Glossary-5
logs
  level, system 3-4
  router, viewing 2-4
  saving for technical support 2-4
  viewing 2-6, 2-10
loop (arbitrated), definition of Glossary-1
loop connection mode 3-13
loop initialization process, *See* LIP
loop port (L_Port), definition of Glossary-4
loopback, definition of Glossary-5
LUN List page 3-27
  discovered Fibre Channel initiators 3-25
LUNs
  definition of Glossary-5
  discovered, information 3-31
  information, importing 2-4
  mapped to iSCSI initiator 3-27
  presentation wizard 2-4, 2-9
  scrubbing, adding 2-5, 2-9
  settings, target 3-4
  unpresentation wizard 2-4, 2-9

M

MAC address
  iSCSI ports 3-18
  management port 3-6
Macintosh, starting SANsurfer Router Manager on 1-5
main window, example of 2-2
maintenance button, definition of Glossary-5
management
  router information 3-6
  SNMP agent 3-10
  workstation, definition of Glossary-5
Management Information page 3-6
mapping
  remote initiator or target 2-5
  resetting between initiators and LUNs 3-2
  targets 2-5
  targets, iSCSI 2-5, 2-9
max burst length 3-21
maximum transmission unit, *See* MTU

media, definition of Glossary-5
menu bar 2-3
menus
  File 2-3
  Help 2-6
  Settings 2-4
  shortcut 2-6
  View 2-4
  Wizards 2-4
MIB
  definition of Glossary-5
  Fibre Channel ports A-6
  network ports A-4
  notifications A-11
  objects A-2
  sensors A-8
  system A-3
Microsoft Windows, starting SANsurfer Router Manager on 1-5
MTU
  definition of Glossary-5
  jumbo frame options 3-21

N

N_Port (node port), definition of Glossary-5
network
  port table, MIB A-4
  settings, iSCSI ports 3-18
network time protocol, *See* NTP
NL_Port, definition of Glossary-6
node
  loop port, definition of Glossary-6
  name, Fibre Channel port 3-13
  port (N_Port), definition of Glossary-5
non-volatile random access memory, *See* NVRAM
notifications
  agent shut down A-12
  agent start up A-12
  FC port down A-12
  generic A-13
  MIB A-11
notifications (*continued*)
  network port down A-12
  objects A-11
  sensor A-12
NTP Server Information page 3-8
NTP servers
  addresses, setting 3-9
  disabling 3-8
  enabling 3-8
  information 3-8
NTP, definition of Glossary-6
NVRAM
  definition of Glossary-6
  iSCSI port contains invalid data B-15
  iSCSI processor failed diagnostic B-12
  iSCSI processor invalid B-14
  reboot timer failed B-13

O

object identifier (OID) 3-11
offline targets, removing 2-9
OID (object identifier), system 3-11
Open dialog box 1-4
operation mode, target LUN 3-4

P

password
  changing for router 3-9
  read community 3-11
  router security, changing 3-9
  trap community 3-11
path, definition of Glossary-6
performance graph, Fibre Channel port 3-15
Performance page, Fibre Channel port 3-15
PID login error B-22
pinging ports 2-9
point-to-point
  connection mode 3-13
  definition of Glossary-6
  link up type B-22

port instance, definition of Glossary-7
ports
  connection mode 3-13
  definition of Glossary-6
  Fibre Channel 3-12, 4-3
  icons 2-14
  ID, Fibre Channel port 3-13
  iSCSI 3-17
  iSCSI, configuring 1-3
  iSCSI, quantity 3-3, 3-20
  iSCSI, speed 3-18
  name, Fibre Channel port 3-13
  pinging 2-9
POST
  definition of Glossary-7
  processor failed message B-17
power on self test, *See* POST
presented targets, iSCSI 3-35
product
  information, viewing 1-9
  name, router 3-3
properties, SNMP A-1

R

read community A-1
  password 3-11
rebooting router 2-9, 3-2
receivers, SNMP 3-11
Red Hat Enterprise Linux, starting SANsurfer Router Manager on 1-5
reduced instruction set computer, *See* RISC
Refresh button 2-6
refreshing
  Fibre Channel port statistics 3-15
  iSCSI port statistics 3-22, 3-23
  router display 2-6
  Router Manager window 2-9
registered state change notification, *See* RSCN
reloading router display 2-6
remote
  initiators, mapping target 2-5
  IP address, FCIP routes 3-39
  router, adding 2-8
remote procedure call, *See* RPC
removing
  data management LUN 2-5, 2-9
  data migration group 2-9
  FCIP route 2-5, 2-9
  initiators 2-9
  mappings between initiators and LUNs 3-2
  targets, offline 2-9
requirements, SANsurfer Router Manager 1-1
rescanning for devices 2-9
resetting mappings between initiators and LUNs 3-2
resource allocate, timeout 3-42
restarting router 2-9
restoring
  factory-defaults to router 3-2
  FRU 2-4
right-click menu, *See* shortcut menu
RISC
  definition of Glossary-7
  FC processor firmware failed B-18
  FC processor paused B-18
  FC processor restarted B-19
  iSCSI processor restarted B-17
route, tracing 2-9
router
  connecting to 2-6, 2-8
  disconnecting from 2-8
  features, licensed 3-12
  firmware, updating 3-2
  Information page 3-2
  information, updating 2-9
  information, viewing 3-2, 4-1
  rebooting 2-9, 3-2
  remote, adding 2-8
  security, changing password 3-9
  services, Data Migration Info page 4-2
  shortcut menu 2-6
  tree 2-10

router log
  definition of Glossary-7
  viewing 2-4, 2-6, 2-10
routes, See also FCIP routes
RPC
  definition of Glossary-7
  error messages for B-23–B-26
RSCN
  definition of Glossary-7
  update received B-22

S

SAN, definition of Glossary-7
SANsurfer Router Manager
  definition of Glossary-7
  exiting 1-13, 2-4
  product information, viewing 1-9
  requirements 1-1
  starting 1-4
saving
  browser location 1-9
  data migration report 4-2
  FRU 2-3
  logs and configuration info 2-4
scanning for devices 2-9
scrubbing LUN, adding 2-5, 2-9
SCSI
  definition of Glossary-7
  INQUIRY command 3-27, 3-30, 3-31, 3-34, 3-36
search, help system 1-7
secret, CHAP 3-22
security
  application access 1-10
  iSCSI port settings 3-21
  router 3-9
  SANsurfer Router Manager 1-10
Security Check dialog box 1-4
Security page 3-9
sensors, MIB A-8
serial number, router 3-3
serial scheduled job, starting 2-5
servers
  NTP 3-8
  NTP, setting addresses 3-9
services
  shortcut menu 2-6
  tree 2-13
setting
  IP address, router 3-7
  NTP server addresses 3-9
Settings menu 2-4
SFP
  API failed memory allocation message B-24
  definition of Glossary-7
shortcut menu 2-6
small computer system interface, *See* SCSI
small form-factor pluggable, *See* SFP
SNMP
  agent management 3-10
  configuration options 3-11
  definition of Glossary-8
  introduction A-1
  properties A-1
  settings 3-11
  trap configuration A-2
  trap receivers, enabling 3-11
SNMP Configuration page 3-11
SNMP Management page 3-10
software version
  router 3-3
Solaris SPARC, starting SANsurfer Router Manager on 1-5
Solaris x86/AMD64, starting SANsurfer Router Manager on 1-5
starting
  SANsurfer Router Manager 1-4
  serial scheduled job 2-5
startup procedures 1-4
  Linux 1-5
  Macintosh 1-5
  Microsoft Windows 1-5
  Solaris 1-5

Statistics page
  FCIP routes 3-42
  Fibre Channel ports 3-14
  iSCSI ports 3-22
status
  Fibre Channel ports 3-13
  icons 2-13
  iSCSI ports 3-18
storage area network, *See* SAN
storage arrays, *See* arrays
Subnet mask, FCIP routes 3-39
switched fabric, definition of Glossary-2
symbolic name, router 3-3
Synchronizing Jobs page 4-4
system
  contact A-2
  location, router A-1
  log level 3-4
  logs, viewing 2-4
  MIB A-3
  OID 3-11
  time, NTP server 3-8

T

targets
  definition of Glossary-8
  devices, rescanning for 2-9
  iSCSI presented 3-32
  iSCSI presented targets 3-30, 3-35
  iSCSI, discovering 2-4, 2-8
  iSCSI, mapping 2-5, 2-9
  LUN settings 3-4
  mapping to 2-5
  offline, removing 2-9
  TCP port number, IPv6 3-21
  unmapping 2-5
TCP
  definition of Glossary-8
  max window size, iSCSI ports 3-21
  port number, FCIP routes 3-41
  port, target 3-21
TCP (*continued*)
  window scaling, iSCSI ports 3-20
  window size, FCIP routes 3-40
temperature, router 3-4
terms and definitions Glossary-1
text, status 2-13
timeout
  error detect 3-42
  resource allocate 3-42
timestamp, FCIP routes 3-42
toolbar buttons 2-6
traceroute, initiating 2-9
tracing routes 2-9
transmission control protocol, *See* TCP
traps
  authentication A-2
  community A-1
  community password 3-11
  configuration, SNMP A-2
  events, system location 3-11
  port, identifying 3-11
  receivers 3-11
tree pane
  Router tree 2-10
  Services tree 2-13

U

unmapping targets 2-5
updating
  firmware 1-3, 2-3, 2-9, 3-2
  information shown in window 2-9
  iSCSI port statistics 3-22
  router display 2-6
upgrading firmware 1-3
uploading
  data migration report 4-2
  firmware 3-2
URL, setting for data migration 4-2
user interface, components of 2-1

V

verifying jobs, configuring 2-5, 2-8
version
  hardware 3-3
  Router Manager, viewing 2-6
  software 3-3
View Logs button 2-6
View menu 2-4
viewing
  help system 1-7
  logs 2-10
  router information 3-2, 4-1
virtual LAN, *See* VLAN
virtual logical area network, *See* VLAN
virtual port group (VPG)
  definition of Glossary-8
  details, viewing 3-23
VLAN
  configuration change message B-27
  definition of Glossary-8
  FCIP routes 3-42
VPG, *See* virtual port group
VPGROUP node
  details, viewing 3-23
  icons for 2-14
VPGROUP_x page 3-23

W

window scaling
  FCIP routes 3-40
  iSCSI port 3-20, 3-21
Wizards menu 2-4
workstation (management), definition of Glossary-5
workstation IP address, setting 1-2
world wide name, *See* WWN
world wide node name, *See* WWNN
world wide port name, *See* WWPN
world wide unique LUN name, *See* WWULN
WWN
  definition of Glossary-8
  Fibre Channel port A-7
WWNN
  definition of Glossary-8
  Fibre Channel port 3-13
  iSCSI presented target 3-30
  login message B-9
WWPN
  definition of Glossary-8
  Fibre Channel port 3-13, 3-24
  Fibre Channel presented target 3-28, 3-35
  Fibre Channel target 3-27
  iSCSI presented target 3-29, 3-30
  iSCSI presented target IP 3-30
  login message B-9
WWULN
  definition of Glossary-9
  discovered LUN 3-31
  target LUN 3-27

X

XML output, importing from host 2-4

Corporate Headquarters QLogic Corporation 26650 Aliso Viejo Parkway Aliso Viejo, CA 92656 949.389.6000 **www.qlogic.com**

International Offices UK | Ireland | Germany | France | India | Japan | China | Hong Kong | Singapore | Taiwan

© 2011 QLogic Corporation. Specifications are subject to change without notice. All rights reserved worldwide. QLogic and the QLogic logo are trademarks or are registered trademarks of QLogic Corporation. AMCC is a registered trademark of Applied Micro Circuits Corporation. Brocade is a registered trademark of Brocade Communications Systems, Inc. Cisco is a registered trademark of Cisco Technology, Inc. Gnome is a trademark of the GNOME Foundation Corporation. Java and Solaris are registered trademarks of Sun Microsystems, Inc. Pentium is a registered trademark of Intel Corporation. IBM and PowerPC are registered trademarks of the International Business Machines Corporation. Linux is a registered trademark of Linus Torvalds. MacOS X and Safari are registered trademarks of Apple Computer, Inc. McDATA is a registered trademark of McDATA Corporation. Microsoft, Windows XP, Windows 2003, and Internet Explorer are registered trademarks of Microsoft Corporation. Netscape Navigator and Mozilla are trademarks or registered trademarks of Netscape Communications Corporation. Red Hat is a registered trademark of Red Hat Software Inc. SANmark is a trademark of the Fibre Channel Industry Association. SUSE is a trademark of Novell, Inc. All other brand and product names are trademarks or registered trademarks of their respective owners. Information supplied by QLogic Corporation is believed to be accurate and reliable. QLogic Corporation assumes no responsibility for any errors in this brochure. QLogic Corporation reserves the right, without notice, to make changes in product design or specifications.